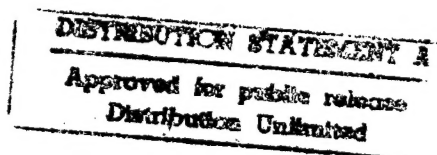


CAA
ANNUAL REPORT
Fiscal Year 1996

NOVEMBER 1996



19970114 076



US ARMY CONCEPTS ANALYSIS AGENCY
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20814-2797

DTIC QUALITY INSPECTED 8

FY96 ANNUAL REPORT

November 1996

Prepared by

**STUDY PROGRAM MANAGEMENT OFFICE
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DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF:

CSCA-MS (5-5d)

19 DEC 1996

MEMORANDUM FOR RECORD

SUBJECT: United States Army Concepts Analysis Agency FY96 Annual Report

1. This year's report portrays CAA as a partner with change, a change that has made it all the more important that we stay in the loop with Army and DOD decision making processes; processes which are approaching 'real time' in terms of response time. Changes in technology, threats, operations, programs, and staffing pushed by changing values, economic realities, and processes in society at large make this problematic and possible at once.
2. By staying ahead of this wave of change, we have statistically stayed productive, but more importantly we are fully engaged in Army and DOD processes as they rapidly evolve. So with "CAA - Partner with Change" as the theme, I welcome you to read our account of FY96 and what possibly lies ahead in the future.

E. B. VANDIVER III
Director

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INTRODUCTION AND OVERVIEW

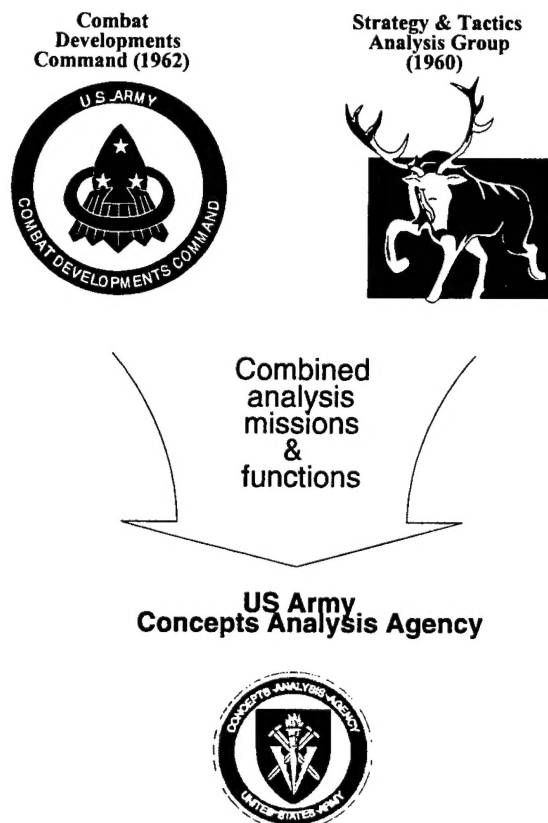
GENERAL

Report Purpose. The Fiscal Year 1996 (FY96) Annual Report profiles the US Army Concepts Analysis Agency (CAA), highlights key elements of FY96 mission performance, presents the current posture of the Agency, describes CAA's direction for the near-term future, and serves as the historical record of FY96 Agency activities.

Report Organization. This report is organized into seven major components starting with **Chapter 1** which provides a snapshot of what happened last year and secondarily provides insights as to how CAA is positioned to meet the challenges of the future. **Chapter 2** highlights major studies which were selected from the most diverse array of analytical products in the history of CAA. It is a testimonial to the creativity and dedication of our analytical staff which continues to foster a growth in productivity during a period of shifting threats and declining resources. **Chapter 3** is the total package of analytical summaries completed during FY96. **Chapter 4** contains a summary of CAA's technological evolution; a period of change accentuated by state of the art technology, parlayed with trained analysts and streamlined processes. **Chapter 5** is a report of stewardship of CAA's personnel and financial resources in a year where personnel authorizations continued to fall, but for which funding levels remained stable with the previous two years. A five-year workload history is at **Chapter 6**, followed by the **appendices**.

CAA ORIGIN, ORGANIZATION, MISSION, PRODUCTS, AND SPONSORS

Origin. CAA was formed as a result of the 1973 STEADFAST Army reorganization which combined missions, functions, and elements of the former Combat Developments Command (CDC) and the Strategy and Tactics Analysis Group (STAG), Figure 1-1. CAA was created to function as the central force analysis activity for the Department of the Army and its leadership.



- 1973 *Staff Support Agency Assigned to Assistant Chief of Staff for Force Development, HQDA*
- 1974 *Reassigned to Deputy Chief of Staff for Operations and Plans, HQDA*
- 1977 *Re-designated as Field Operating Agency*
- 1979 *Reassigned to the Chief of Staff, Army*
- 1991 *Designated the US Army's Center for Strategy and Force Evaluation*

Figure 1-1. CAA History



Figure 1-2. CAA Organization Chart

CAA Organization.

♦ CAA has evolved over the years to its current organizational structure as a field operating agency (FOA) of Headquarters, Department of the Army (HQDA). While the primary role of CAA remains to support HQDA and Army leadership, its analytic activities have expanded to encompass a wide range of analytical services performed in support of virtually all Army elements, and occasionally other Department of Defense (DOD) and US government agencies.

♦ CAA's organization is headed by the Office of the Director which includes the Chief of Staff and Technical Director who along with the Director oversee eleven Analysis Divisions, (two of which are special elements performing Operational Capability Assessments - Northeast Asia and Southwest Asia) and two support divisions.

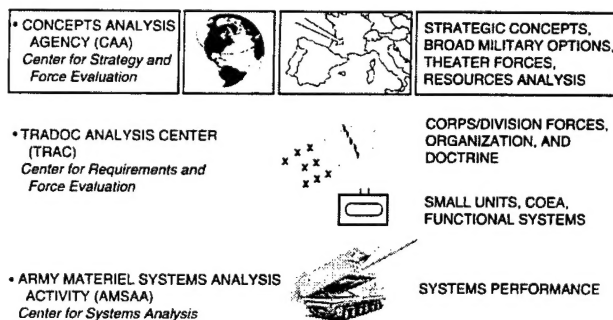


Figure 1-3. CAA Mission Within the Army Analytical Framework

Mission. Within the Army's overall analytical framework (Figure 1-3), CAA is designated as The Army's Center for Strategy and Force Evaluation. CAA is assigned the primary mission of assessing strategies, strategic concepts, broad military options,

resource allocation alternatives, and analyzing Army force level capabilities and requirements in the context of joint and combined forces.

♦ CAA analyses are to assist the Chief of Staff, Army to evaluate, plan, and execute the Army's strategic force mission; assess alternative resource applications; and determine requirements and establish objectives for joint and combined theater, regional, low-intensity, and contingency forces.

♦ CAA force analyses focus on integrating scenarios, operating concepts and objectives, unit and materiel performance characteristics, and the operating parameters of the regions for which forces are constituted. These analyses form the baseline for lower level forces and systems analyses.

WHAT WE DO

This review is not intended to characterize FY96 as the watershed year in the evolution of our study program. The seeds of change have been sown throughout our existence. However, in retrospect it was a year when circumstances and opportunities converged to a point where we were encouraged by the possibilities of new ways to do business. This convergence will be illustrated in the form of Venn Diagrams and elucidated by teachings of prominent futurists in America today - the Tofflers and John Naisbitt. The Tofflers describe the nature of future wars and Mr. Naisbitt gives a look into the future workplace, a workplace which we have already entered. The convergence of these two factors puts CAA in the daunting position of simultaneously dealing with both; a situation similar in concept and vision to their futuristic propositions; a situation loaded with challenges well into the future.

Building on blocks put down by Alvin and Heidi Toffler in their book - War and Anti-War (1993) - CAA has experienced a change in its cold war focus from defeating an enemy who fought like us to a scattering of analytical forces to accommodate a variety of uncertain threats, chief among them our own declining defense dollars. *Paraphrasing -*

** The Prussian military theorist Clausewitz himself noted that "each age has had its own peculiar forms of war... Each therefore would also keep its own theory of war." In this era of "the growing heterogeneity of war" it will make it vastly more difficult for each country to assess the military strength of its neighbors, friends, or rivals.*

** Few understand just how varied tomorrow's wars are going to be - and how that increased diversity could complicate future efforts to maintain peace. Clausewitz maintained that rather than undertaking anxious study of minute details we need to make a shrewd glance at the main factors.*

Economic realities may converge with this reality to suggest that we simplify our models while improving our planning factors. The resources required to support the status quo may be out of balance with the threat evaluation potential and economic realities.

** To succeed, we will need a better vocabulary to describe the form of warfare that springs from a particular way the world is likely to resemble in the future. Improved planning can only be achieved by focusing on the main factors, uncluttered with minute details and analytical extravagance. For reasons already stated, economics and values will continue to shape how we prepare for war while facing an era where maintaining the peace will be more complicated than ever.*

The analysts on staff who have institutional knowledge of our simulation and analysis models are declining due to natural forces such as military turnover and an aging civilian workforce exacerbated by a reduction in authorizations for both groups. This becomes a real difficulty in a technological workplace such as CAA where it takes many years to cultivate journeymen level analysts. When this happens along with rapid changes in our three basic resources (Figure 1-4) it is often time to "change horses."

The Tofflers so eloquently state what we at CAA have been facing since the end of the Cold War when the future was more threatening, but far more certain than what we face today. Since becoming a Reinvention Laboratory, we have analyzed these issues and are well on our way to making substantial changes in the ways we do business. We are seriously questioning the inputs, processes, and outputs of our models. The sensibility of supporting these models in their current configuration is at the heart of these questions.

HOW WE DO IT

The following diagram illustrates the relationship between the three fundamental resources of our study program; **Modelers**, **Technology**, and **Threats/Circumstances**. Imagine the

circumference of these circles as being twice the size that you see below. Now imagine these circles representing the useful life cycle of each resource. That's how things were seven to eight years ago as the Berlin Wall was coming down. With succeeding years the circles have become smaller and the useful life of each resource is less and less. Call it the pace of change for lack of another term, but what is most significant is that from our vantage point, the useful life cycle of each resource is dependent on the other; thus the interlocking circles.

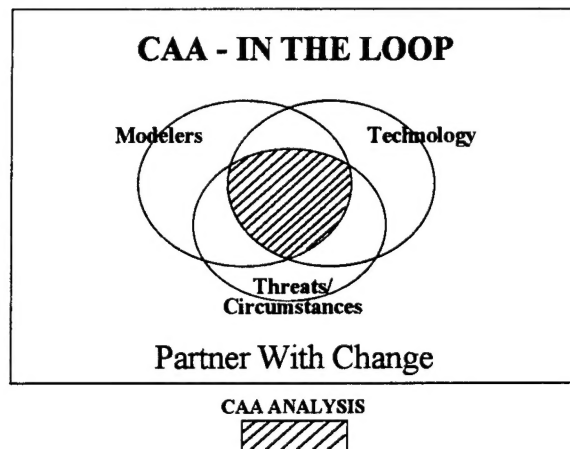


Figure 1-4. CAA In the Loop

One may question how threats/circumstances are dependent on the other two resources. To repeat the Tofflers - "To succeed, we will need a better vocabulary to describe the form of warfare that springs from a particular way the world is likely to resemble in the future." CAA and other analytical agencies greatly assist in building and defining this vocabulary. So yes, threats and circumstances are dependent on the modelers and the technology to facilitate their analysis.

To summarize, the size of the circles represents the pace of change, and the loop where the cycles intersect represents the area CAA must occupy for optimal analysis. This theme is repeated twice more in this report. But what you should discern from the CAA-In-The-Loop metaphor is that by staying in the loop we can cut the lag time between product demand and product delivery. As the loop contracts, so does our allowable reaction time. The force which keeps us in the loop is of our own creation; to ease up will send us outside the orbit of modern-day Army decision-making - a fate we must continually work to avoid.

CAA's Analytical Products.

WHAT WE DO

The great 19th century Prussian army officer and military theorist, Karl von Clausewitz, stated that the decision on the size of military forces "is indeed a vital part of strategy." By considering military resources as a basic element of military strategy, we elevate the importance of military objectives and strategic concepts when studying force structure issues. Carrying this idea to its conclusion, policy and force structure become the justification for each other. This often results in a dilemma that defense planners seem to face more and more each day, i.e., keeping the two in balance.

Put another way, military objectives and military strategic concepts of a military strategy establish requirements for resources, and are in turn influenced by the availability of resources. If we fail to consider military resources as an element of military strategy, we may be faced with a strategy-capabilities mismatch.

CAA analysis is often used to mediate the differences between these competing forces. This analysis transcends the six categories of studies introduced later in this chapter and which increasingly puts us in the loop, working inside Army and defense cycles and processes.

HOW WE DO IT

Analysis resources are short and the demand for quick turnaround of information compels us to be *in-the-loop* on short, medium, and long term planning cycles. Decision-makers are confronted with quick decisions which often impact their areas of concern and to assist them in these decisions we often find ourselves in a quick reaction mode.

In times of war, CAA must exercise its set of integrated *models* to assist the DA decision-makers in strategy and force evaluation analyses. Most recently, the Prairie Warrior Exercise of a few years ago, established CAA's *operational role* in the day to day decisions required by the DA staff in support of the War Fighting CINCs.

In 'normal' times CAA's modelers must be at the ready to interject our suite of resource analysis *models* into the DA *planning and programming* cycles. Value Added Analysis and the pre- and post-processing models which assist in this process must

be kept current and meaningful to the decisions confronting DA and Defense resource managers.

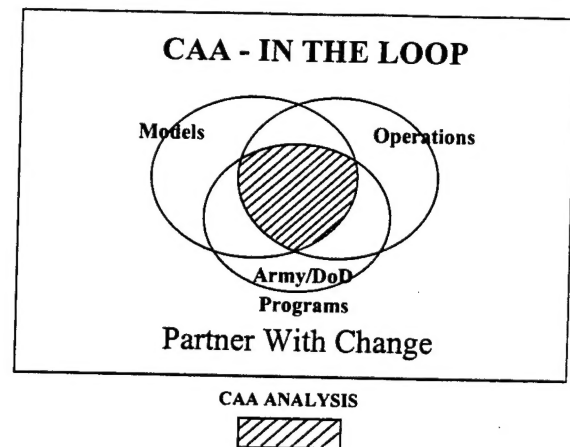


Figure 1-5. CAA In the Loop

WHAT WE DO

Each passing year we are asked to integrate Army planning processes with the rest of the Defense establishment to achieve a level of synergism that will carry us through this period of declining Defense dollars. Decisions such as which type of deep strike arms capability to procure, which service should employ them, and exactly how to employ them is one example of concern to force developers. CAA has stayed in step with this change to maintain our viability as the Army's Center for Strategy and Force Evaluation.

- ♦ Studies and quick reaction analyses (QRA) are the primary products CAA delivers to sponsors. Studies are essential to solving long term planning problems in areas where extensive research and data gathering are sizable phases of the total effort. Conversely, QRA are normally offshoots of recently completed studies often requiring a different perspective than the parent study. QRA could reveal new elements which were not addressed in the original body of research, creating new areas of inquiry, eventually leading to a sponsor requesting an entirely new study, years after the original study.

Therefore, just as we look for balance in the type of analysis we perform we also look for balance in the study and QRA workload programs.

HOW WE DO IT

So much for what we do, how we perform the analysis has been given more attention than anytime

Reinvention Laboratory is in large part the cause and consequence of always seeking smarter ways of doing business. In pursuit of excellence we often are caught between two competing concerns - 'form' and 'content'; management wanting both attributes yet understanding that time is a real constraint. To digress...

It is possible to both: (1) describe different contents by the same form (e.g., study reports) and (2) fit one content into different forms (e.g., QRA/Memorandum Reports). In the interest of empowering the employee and removing a layer of management, the choice of form has been largely delegated to study directors befitting the content and time requirements of the effort. Management has published guidelines for making this determination and retains the responsibility for final acceptance of the analytical product; as always, the sponsor maintains responsibility for acceptance of the content. Regardless of the form the analysis takes, CAA has the ability to replicate the results of any analysis product it publishes, be it a Study or a QRA.

- ♦ In keeping with the theme of this report we have also sought and opened every possible doorway to be responsive to our sponsors. Maintaining contact with sponsors, developing new contacts, and being generally proactive and receptive to new workloads has enriched the workload mix here at CAA. The Director, staff and line management, and study directors all bear a degree of responsibility for responsiveness and thereby the lasting contribution of CAA analysis to the Department of the Army.

WHAT WE DID

Appendix A is a detailed breakout of the workload accounting at CAA, Chapter 6 is a five year history of completed analysis efforts, and the rest of this section is further discussion of recent workload trends.

- ♦ The graph at Figure 1-6 illustrates the number of analytical products CAA delivered to sponsors over the past 7 years peaking at just over 100 per year. Figure 1-7 illustrates the broad spectrum of support to sponsors; both charts reflecting high achievement when considering that we have experienced a significant decline in resources over the same period.

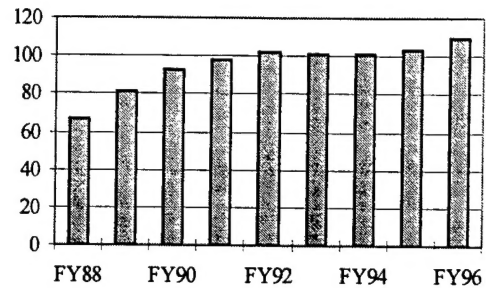


Figure 1-6. Number of Analytical Products Delivered to Sponsors

To maintain our viability in the face of continuous change in the threat spectrum facing us, we must be receptive to new information, we must store and process it, and we must continue to monitor for change.

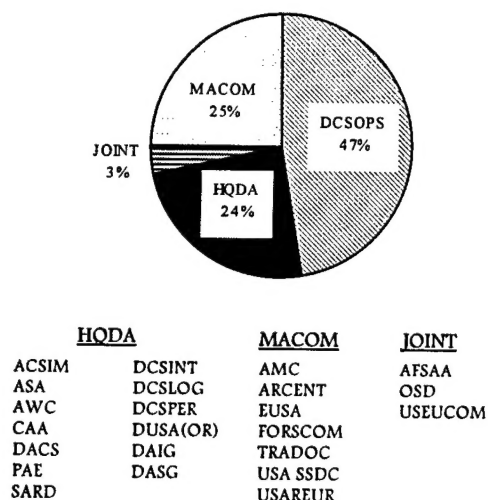
HOW WE DO IT

Problem solving in the post cold war era requires us to focus on the activities that traditionally have not been programmed and that require imaginative thinking. This type of thinking is fostered in various forums at CAA, such as workshops, political/military games, and management planning conferences. Ultimately, however, CAA must incorporate logic into a computer program that complements the human ability to observe, recognize, discover, and generate imaginative ideas. This large and important segment of CAA work, not portrayed in Figures 1-6 & 1-7 resurged this year to meet these new demands. Otherwise, we will have to increasingly rely on heuristics to develop reasonable answers to modern threats or else be forced to portray unreasonable scenarios to fit some of the older models. The longer we can sustain this resurgence, the better we will be positioned to meet this level and mix of analyses.

WHAT WE DO

- ♦ CAA's primary mission is to provide analytical support to HQDA and Army leadership. CAA analysis support is also provided to Army MACOMs, other Army activities, and occasionally Department of Defense (DOD) and US government agencies. Figure 1-7 presents a proportional breakout of CAA's FY96 analysis support to all sponsors.

Completions by Sponsor



**Figure 1-7. Studies & QRA
Delivered to Sponsors**

CAA GLOBAL PERSPECTIVE AND VISION OF TOMORROW

Throughout history men have been calculating the chances of success in future war by assessing the available statistics on past wars. Predicting the outcomes of wars in the 21st century may be the most challenging yet.

WHAT WE WILL DO

Recent trends suggest that conflicts between civilizations may be the latest phase in the evolution of conflict in the modern world. These wars will be in faraway places caused, in part, by deep historical differences, lacking the political and economic immediacy traditionally deemed sufficient to justify US intervention. All the same, as in the current Balkan conflict, we will have to act. When these situations arise we could likely be involved in other conflicts elsewhere in the world, aligned with forces from other nations.

The war with Iraq was a strategic war largely over oil vital to western interests. The fact that we relieved untold suffering in Kuwait was secondary to stabilizing the international oil supply. For these type of wars we are largely prepared and have ongoing analysis deserving of their status as Major Regional Contingencies (MRCs).

However, how long will it be before we have another conflict where the decision to fight will be as clear? Most future clashes will occur at two levels. At the micro level as in the former Yugoslavia, adjacent groups along cultural fault lines will struggle, often violently, over the control of territory and each other. At the macro-level, states from different civilizations will compete for relative military and economic power, struggle over the control of international institutions, and third parties will competitively promote their particular political and religious values. The macro level is where we will most likely be engaged with shifting coalitions and alliances against enemies who challenge US values and interests.

HOW WE WILL DO IT

So much for a summary of our global perspective. The vision we have of future wars and the means to carry them through to victory is no longer the total province of higher level decision makers. The vision is just as murky for Army leadership as it is for everyone else who has an interest in these matters. Implicit in all of this is an understanding here at CAA to be prepared for any eventuality, whatever and wherever it may be.

To that end, CAA has relied less and less on predicting events external to our control and more on internal changes that will position us to meet any challenge with a reduced resource base.

Borrowing liberally from John Naisbitt's observations of 6-12 years ago in books such as *Megatrends* (1984) and *Megatrends 2000* (1990) recent developments at CAA remarkably bear out his predictions. Italicized sentences are direct quotes.

The most reliable way to anticipate the future is by understanding the present. Preeminent in the Information Age is the heightened role of the individual, a dramatic change as we moved from the Industrial Age to the Information Age. Workers were beasts of burden in the Industrial Age, a time when one's chief value was to labor in smokestack industries at the direction of top-down management. This role has been essentially reversed in the Information Age when a slimmed down management structure largely exists to support the employees in their development. This change did not occur in a vacuum.

Change occurs when there is a confluence of both **changing values and economic reality**, not before. Top-down solutions are not effective in the Information Age. Instead, high technology workplaces must invest in the individual. Once the individual possesses a working knowledge in their field, they become the new agents of change, more difficult to replace than the work center manager. This phenomenon has not been lost on the cost cutters and reinventors evidenced by profound changes in how we do business at all levels of **processes**.

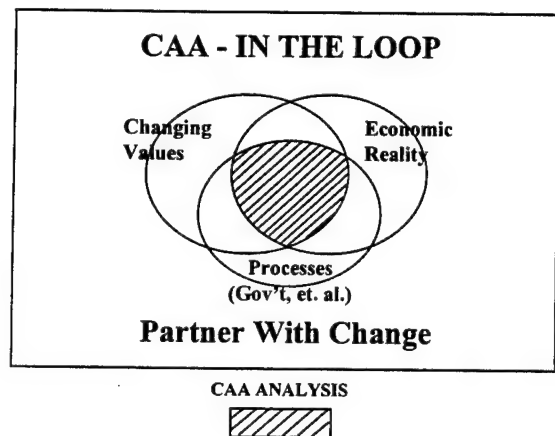


Figure 1-8. CAA In the Loop

At the macro level, the U.S. Government is being reshaped by societal values, facilitated by technological gains in opinion polling- values shaped in the post cold war era and the concomitant peace dividend. This dividend is earmarked for reducing the national debt and for girding up our federally-financed entitlement programs.

At our level (DoD, Army, CAA) we have felt this change and are looking for new and efficient ways of doing business all the while maintaining readiness. Trends, like horses, are easier to ride in the direction they are already going. For our part, CAA has eliminated one layer of management, enacted process action teams and empowered the individual employees to come up with new and better ways of doing business always keeping an eye on the bottom line.

Hierarchical, pyramid managerial systems evolved from a need to keep track of people and things people did. With the computer to keep track, we can and have restructured our organization horizontally. As previously stated, knowledge primarily resides in the individual; a new form of capital in the Information Age. Therefore, even if we were economically able to retain the old and

more expensive managerial systems: 1) the computer and their attendant information management systems make them largely superfluous and 2) knowledge/information is power and this power resides in the individual a situation destined to end in a potemkin village if we, our organization and processes, do not change with the values and economic reality of society at large.

In conclusion, it should be clear that Army operations research had to change. The multitude of diverse threats, complicated by changes in technology, operations doctrine, programs, and staffing pushed by changing values, economic realities and process in society at large made CAA's decision to be partners with this change the only choice.

FY96 ANALYSIS PROGRAM OVERVIEW

CAA's Goals. The goal of CAA is to provide high quality, and timely analyses that promote a strategic Army, capable of decisive victory, that can mobilize and deploy whenever necessary to preserve freedom and protect interests vital to a Free World.

In support of the National Security/Military Strategy, CAA provides analysis of the means to accomplish the National Military Objectives in various ways. Commonly known as the ends-ways-means test of the national military strategy, it is the overall method by which the US Government tries to keep all three aspects in balance.

The purpose of CAA's analysis program is to evaluate the means proposed by Army leadership as to ways of applying military force to satisfy the ends; ends being the national military objectives, and ultimately the National Security Strategy. Since the fall of the Soviet Union, our mission has expanded to include a sizable investment in studying ways to efficiently manage the Army's declining resource base. As was the case with the Soviet Union, fiscal insolvency poses just as great a threat to national security as any modern day military threat. The relationship of ends-ways-means to four of six CAA study categories is notable by how closely our analysis workload correlates with the problems faced daily by national decision makers, evidenced by the chart at Figure 1-9.

At the end of this chapter we will graphically relate key FY96 study completions to all six study categories. Chapter 2 is a sampling of studies in each of these categories. Chapters 4 & 5 show how we are equipped and staffed to meet these requirements. Chapter 3 contains a brief summary for all FY96 analysis completions.

CAA Productivity.

♦ By now it should be obvious as to how CAA defines its true productivity - *Staying In The Loop*. However, to maintain our historical perspective we must account for production in the old-fashioned way - numbers. During FY96, CAA produced a total of 110 distinct analytical products.

...a 110% productivity increase over the past six years.

This exceeded last year's number of products delivered to sponsors. CAA also completed an additional 29 analytic efforts in direct or indirect support of these sponsored efforts, an increase of eight over last year. This accomplishment is notable since it occurred during a period of declining CAA manpower (Figure 1-10).

This achievement is indicative of the capabilities of CAA's work force and the positive contribution of CAA's Total Quality Management (TQM) program to FY96 productivity (see Resource Trends section below). To drive home this point, the historical trend chart at Figure 1-9 demonstrates a 110% productivity increase over the past six years. This productivity gain was borne out of a necessity to overcome severe cuts in manpower, made worse by a sudden diversification in our workload, and hastened by a proactive Total Quality Management program.

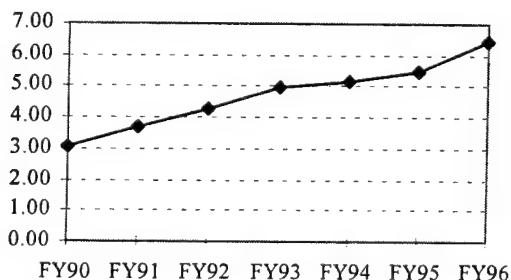


Figure 1-9. CAA Productivity Trend
(Scale=Work Units per 10 PSY)

RESOURCE TRENDS

As can be seen in Figure 1-10, CAA's decline in budget and manpower has stabilized. We have managed this decline through hiring freezes and careful planning of our discretionary spending; a stabilization in both resource categories is projected by current planning documents.

To echo last year's report, resource reductions have been met with increased productivity through a robust Total Quality Management program, ongoing research and analysis activities, and improved technologies and methodologies. The resources devoted to these initiatives are at the margins of CAA direct mission support capabilities and sometimes have been resourced at the expense of management and administrative support.

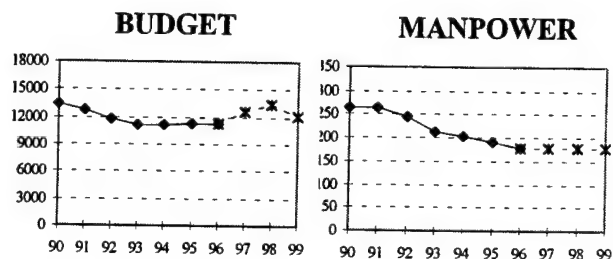


Figure 1-10. FY96 CAA Resource Trends

SUMMARY

Thus far, this report has touched on the workload and resource challenges facing CAA and the organization, equipment, and tools necessary to efficiently and effectively produce the highest quality and quantity products possible.

In the coming chapters are specific examples of the investments CAA has made to produce quick turnaround, multifaceted analyses; and the strides which have been taken to reorganize and re-equip in such a way to meld assets to maximize productivity and thereby remain useful to our sponsors' analytical needs and performance expectations.

Also in the coming chapters are highlights and descriptions of CAA FY96 accomplishments, which are the fruits of these investments and a harbinger of things to come.

CAA SUPPORT TO NATIONAL SECURITY STRATEGY

<u>ENDS</u>	<u>WAYS</u>	<u>MEANS</u>	<u>CAA Analysis of...</u>
Deter Aggression	Overseas Presence	Force 2000	Force Development Strategies Unconstrained by current force posture
Deter and Provide limited Defense against Nuclear Attack	Deterrence	Adaptive joint force packages	Pol-Mil analysis/ Arms control
Sustain Engagement with Allies and friends	OOTWs & Warfighting	Force Enhancers & Force Multipliers	Operational Strategy based on existing military capability
Reduce the National Debt	Improved Efficiency	Reinvention	Optimal Use of Resources

Figure 1-11, CAA Support to Nation Security Strategy

EXAMPLE ANALYSES UNDER CAA WORK CATEGORIES

♦ **FORCE DEVELOPMENT (FD) STRATEGY** (less constrained by current force posture)

Support Force Requirements Analysis-2003 (SRA-03)
 Impact of Army CSS on Warfighting Capability (LOGWAR)
 Integrated Theater Missile Defense - Capability Assessment (ITMD-CAP)
 Active, Passive, Attack, BMC41 - Pillar Integration (APAB-PI)
 Army Attack Operations-North East Asia 2002 (AATOP-02)
 Impact of Light Brigades on Division Design (ILIB)
 Lower Tier Stockage Alternatives-Missile Inventory Solutions (LOTS-MSLS)
 Southwest Asia OPLAN Analysis of Patriot - Deployment (SOAP-D)

♦ **POL-MIL ANALYSIS/ARMS CONTROL**

Assessment of Banning Anti-Personnel Mines - SWA (ABAPM-SWA)
 Nuclear Impact Assessment - 2 (NIA-2)
 Pacific Challenge 96 Political-Military Game (FC-96)
 Pacific Vision 95 Issues Workshop (PV-95)
 Stability Analysis of Africa (STAAF)

♦ **OPERATIONAL STRATEGY** (based on existing military capability)

Decision Support Modeling IV - Support for CFC/USFK J-5 (DSM IV)

Early Counteroffensive Investigations - SWA (EIC-SWA)

Internal Look-1015 (ILS2)

Korea, Bosnia, Haiti Analysis, Third Version (KOBOSH III)

Phantom Warrior (PHANTOM WARRIOR)

Theater Level Simulation of Ammunition Distribution System (TLS-ADS)

Wartime Requirements Near Term Simultaneous Dual MRC, FY2003 (WARREQ-03)

♦ **OPTIMAL USE OF RESOURCES**

Army Program Value Added Analysis 98-03 (VAA 98-03)

Assessment of Logistics & Costs for Hazardous Materials Management Implementation (ALCHMMI)

Plng Environmental Resource Strategy Evolution & Util Sty (PERSEUS)

Anti-Armor Requirements & Resource Analysis Study (A2R2)

Fleet Age Recapitalization - Communications System (FAR COMMS)

Quality of Life Measurement and Analysis (QUAILMAN)

SUPPORTING ANALYSES:

♦ **PLANNING DATA/FACTOR DEVELOPMENT**

Joint Svc Chemical Defense Equipment Consumption Rates III (JCHEMRATES III)

An Examination of Alternative MDSQ Factors (AEA-MDSQ)

Ardennes Campaign Simulation - Follow on (ARCAS-FO)

Data Analysis of Demography (DAD)

The Battle of Kursk, Southern Front - Phase III (KURSK III)

Army Strategic Planning Workshop - 1996 (ASP 96)

♦ **TOOL & METHODOLOGY DEVELOPMENT** (in support of Operational and FD strategies)

Evaluating Land Value Study (ELVS)

Joint Chemical & Biological Defense Program Prioritization (JCBD PRI)

Prioritization of Army Strategic Mobility Project Resources (PASMPR)

Political/Economic Risk in Countries & Lands Evaluation (PERICLES)

NBC Casualty Assessment Study (NBCCAS)

Deep Attack/Weapons Mix Study Support (DAWMS)

Objective Force Planning (OFF)

Summaries Follow in Chapters 2 & 3.

ANALYTICAL EFFORTS OF SPECIAL INTEREST

INTRODUCTION.

As partners with change, CAA managers provide leadership, encourage teamwork, and are tolerant of analysts catching up with the pace of change. The benefits of change must be readily apparent before risking employee morale simply for the sake of change; a perceptual challenge for managers in the Information Age. These are cultural changes, and there are always going to be difficulties along the way.

In overcoming these difficulties we have produced an impressive array of analytical products. Foremost are those which appear in this section. Following this section is special mention of the organizations, events and personnel who met these challenges and excelled in their respective efforts.

Moving away from the status quo comes at a price. A price in terms of creativity, speed, and market focus. A price that when paid results in improved productivity, innovation, better products, and growth. A growth reflected by the products, people, and organizations deserving of the special mention which follows.

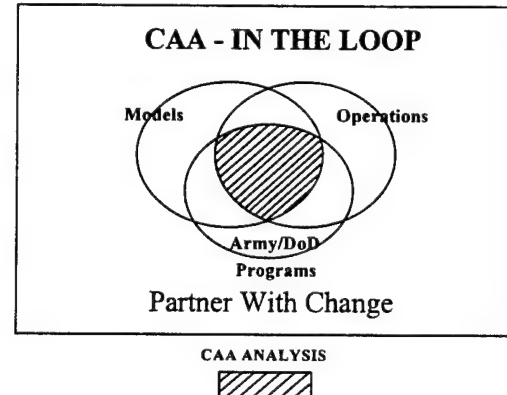
ANALYSIS AREAS OF INTEREST

Again, the six major analysis areas featured in this year's report are:

- ❖ Force Development (FD) Strategy, less constrained by current force posture
- ❖ Pol-Mil Analysis/Arms Control
- ❖ Operational Strategy based on existing military capability
- ❖ Optimal Use of Resources
- ❖ Planning Data/Factor development
- ❖ Tool and Methodology development in support of Operational and FD strategies

FORCE DEVELOPMENT (FD) STRATEGY,
LESS CONSTRAINED BY CURRENT FORCE
POSTURE

Longer range strategies may be based on estimates of future interests, threats, objectives, and requirements, and are therefore not as constrained by current force posture. These long range strategies are more often global in nature and may require improvements in military capabilities. Military strategies can be regional as well as global, concerning themselves with specific threat scenarios. From a planning standpoint, it is difficult to conceptualize a current conventional threat that requires urgent improvements in military capabilities and yet we dare not ignore such a possibility. So even though the operational strategies have by their nature a greater air of believability, the Headquarters Department of the Army (HQDA), and by extension CAA, must not lose their longer range focus.



Armor Battalion (ARBATTS). This study examined the impact on force effectiveness of changing the number of armor systems in Corps level vignettes in two major regional contingencies. With a 48 hour suspense it was decided to base the analysis on excursions of near-term scenarios developed in the previously completed Value Added Analysis using the Eagle model. The analysis indicated that there would be minimal effects, based on fractional exchange ratios, because other systems stepped in to service targets not killed as a result of less armor in the force.

Active, Passive, Attack Operations, Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)-Pillar Integration (APAB-PI).

The purpose of the APAB-PI Study was to develop a methodology and a supporting model which simulates each of the missile battles that together comprise the missile defense campaign for an entire theater. A process which allows the examination of the entire campaign enables analysts to answer decision-makers' questions regarding the effect of different aspects of the Tactical Ballistic Missile (TBM)/Theater Missile Defense (TMD) battle on that campaign. At the same time, the methodology and model must also simulate the individual interceptor-on-missile engagements.

The APAB-PI methodology is focused on two goals. The simulation of the TMD battle, and the simulation of the TMD campaign. The TMD battle is concerned with the interceptor on missile engagements. The TMD campaign concentrates on resource allocation, optimization, and the effects of multiple missile battles. The APAB-PI model portrays both, and integrates the battles and the campaign together.

The success of the APAB-PI study effort has prompted continued requests for the application of the methodology and the adaptation of the model to new analytical efforts.

The study used a top-down approach to the analysis. The pillars of TMD (Active, Passive, Attack Operations and BMC4I) were represented and then expanded upon. As each pillar was developed, sensitivity runs were conducted for that pillar independently. Then each pillar was examined in combination with the other aspects of the TMD campaign at a generic level and then a more detailed level.

The success of the APAB-PI study effort has prompted continued requests for the application of the methodology and the adaptation of the model to new analytical efforts. For example, out-year analysis of deployment plans for both Northeast Asia and Southwest Asia are being examined. Additional work is planned for current Northeast Asia OPLANs.

APAB-PI is also planned to support several wargame simulations at CAA.

Integrated Theater Missile Defense - Capability Assessment (ITMD-CAP) Study. An increasing number of countries have or will have theater missile capabilities. Theater missiles include ballistic missiles, cruise missiles, and air-to-surface missiles whose targets are within a given theater of operations. These capabilities, coupled with the unpredictability of potential adversaries, represent a serious threat to US-deployed, allied and coalition forces, population centers, and critical assets worldwide. The proliferation and growing sophistication of this threat stress the current theater missile defense (TMD) capabilities of the US and its allies. The tactical ballistic missile (TBM) threat was the focus of the ITMD-CAP study.

The purpose of this study was to integrate enemy missile attacks into the overall theater campaign. The damage that TBM attacks caused to the targets was assessed. The impact of these missile effects on the progress and eventual outcome of the theater campaign was evaluated. Theater-level measures of effectiveness were determined.

The campaign centered on the operations of the Combined Forces Command (Republic of Korea and US-deployed forces) defending against a massive North Korean offensive into South Korea during a 2002 timeframe. The effects of the enemy theater missiles that reached their targets were assessed. These effects included aircraft and combat unit attrition, reductions in aircraft sorties, and delays of air and sea reinforcements/supply. Finally, the impact of these missile effects on the entire theater campaign was measured. These measures included forward edge of the battle area (FEBA) movement, major equipment losses, fractional exchange ratios (FER), and changes in the timing of the execution of the phases of the operation plan.

Brown & Root Substitution Analysis (BRSA). A new dimension in long-term Force Structure Strategy has recently emerged.

Military chiefs have firmly endorsed the notion of greater privatization, a marked shift from Cold War days when they regarded private firms as ill-equipped or too unreliable to count on in a crunch.

The demands of tighter defense budgets have driven military commanders to embrace outsourcing of support activities as a cost effective way of freeing up funds and manpower for combat operations.

We are not concerned simply with winning wars, but winning at a minimal cost. Also, since U.S. Strategy now rests on being able to wage relatively brief regional conflicts rather than prolonged global war, requirements for a wartime surge in support capacity have diminished. Then too, private firms have steadily assumed more support tasks, boosting our confidence in their ability to deliver.

BRSA was sponsored by the Deputy Chief of Staff for Operations & Plans (SSW) to determine the Army force structure that would be required to conduct the missions that Brown & Root Services Corporation (BRSC) had been contracted to perform in Bosnia. BRSA looked at the force structure needed for each individual mission, and the force structure needed if the Army did all of the BRSC missions.

The basic methodology used was a three step approach. Step one was to first identify all the tasks BRSC had been contracted to perform. Step two was to use FAST-OR (Force Analysis Spreadsheet Tool - OOTW Requirements) to: (1) establish a basecase force structure where the Army did not do any of these tasks, (2) establish an individual case force structure for each task, and (3) establish a total case force structure where the Army did all of the tasks. Step three was to use the matching tool MARTYR (Matching Army Requirements To Yearly Resources) to compare each case (all of the individual cases and the total case) to the basecase to determine the extra forces that were needed for each case. These extra forces that were identified would be the forces needed for the mission that was being considered for that particular case. The extra forces identified in the total case would be the forces needed if the Army did all the BRSC tasks. These results were provided to the sponsor.

Impacts of Army CSS on Warfighting Capability (LOGWAR). This study assessed impacts of strategic lift and US Army combat service support (CSS) force structure limitations on campaign results. It suggests using linear programming to schedule unit deployment and suggests operational measures of combat service support to demonstrate impact. The study then applies these suggestions to the Support Requirements Analysis (SRA) for 2003.

The application estimates the ability of strategic lift air and sea fleets to meet the theater CINCs' deployment schedules for the theaters, estimates required deployment dates for US Army transportation units, analyzes the ability of available US Army transportation units to support those forces once they enter the theaters of operations, and draws conclusions on the impact of CSS on courses of action available to the theater commanders.

Mobilization Capabilities Evaluation Model - Prototype Development (MOBCEM-PD). The MOBCEM-PD project concerns the development of a prototype system to be used as the basis for the full-scale mobilization model. MOBCEM will be a critical tool for providing the ability to evaluate and improve mobilization capability. The model will simulate mobilization operations and analyze theater capabilities and shortfalls in connection with major force structuring studies. It will also allow for mobilization analysis of capabilities and issues independent of the theater combat models. MOBCEM will model the mobilization system from Home Station to Port of Embarkation and will include the modeling of Active Component and Reserve Component units, individual personnel, and materiel at all levels of mobilization through full mobilization. When completed, this tool will allow CAA, the Army Staff/Major Commands (ARSTAF/MACOMs), and the Office of the Secretary of Defense (OSD) to respond to requests for studies and analyses of various aspects of the mobilization process.

The MOBCEM prototype's focus is on the Mobilization Station (MS). All servicing areas, i.e., billeting, messing, records processing, readiness evaluation, medical and dental processing, Organizational Clothing and Individual Equipment (OCIE) issue, administrative processing, theater orientation, training, validation, and outprocessing, are represented at the MS. The other major nodes (Home Stations, CONUS Replacement Centers, Training Centers, and Ports of Embarkation) are represented but consist of queues only (no servicing areas have been implemented). Testing and evaluation of the prototype have concluded that the prototype development was successful and the prototype is now serving as the basis for the full-scale system development which started in January 1996. Phases I and II will constitute the Army

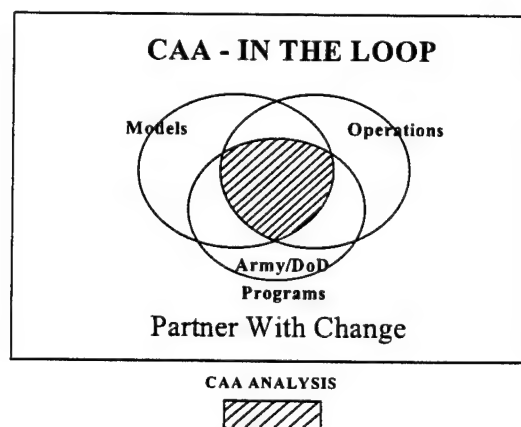
Strategic Lift Tradeoff (STRATLOFF). Recent and ongoing force downsizing and the attendant trend towards a CONUS based Army force have increased the demand and importance of being able to rapidly deploy contingency forces worldwide to meet US strategic and military objectives. These mobility requirements are in response to the US increased commitment to various contingency operations that range from operations other than war (OOTW) to major regional contingencies (MRCs), or a combination of these. Airlift becomes more critical for maintaining a rapid response capability, particularly within the first 3-4 weeks until the sea lines of communication (SLOC) can be established. This analysis examines the impact of lift variations of existing and planned US strategic airlift and sealift fleets. This study is an application of a multi-theater scenario using a newly developed high resolution, end-to-end simulation model called the Global Deployment Analysis System (GDAS).

Process, and other Joint/OSD/Service planning processes. Assumption-Based Planning (ABP) was employed during the workshop. The workshop objectives were to: conduct an assessment of the re-engineered Army Strategic Planning Process; identify shortfalls and recommend corrective actions in the Army strategic planning process, review and revise The Army Plan (TAP) strategic planning "strawman" chapters, and revise AR 11-32 (Army Long-Range Planning System). Background. The primary reason for conducting the Army Strategic Planning 96 Issues Workshop (ASP 96) is to reestablish within the PPBES process an Army mechanism for strategic planning. To accomplish this goal a two and one half-day Issues Workshop was executed 4-6 June 1996. Workshop scope was strategic planning into the 21st Century. The issues were to: design the strategic planning process to address near- and long-term issues simultaneously to a 20-year planning horizon, identify issues preventing the modernization of Army Strategic Planning, determine how to leverage Joint/OSD/Service strategic planning efforts, prototype new approaches, capture Army senior leadership vision, identify and examine common planning assumptions and analytic inputs, and incorporate Joint Doctrine, Training, Leader Development, Organizations, Materiel, and Soldiers (DTLOMS) initiatives. The products were: validation of the Army Strategic Planning Process; Revised strategic planning chapters called: Future Security Environment to 2020 and Army Long-Range Perspective; and a Revised AR 11-32.

OPERATIONAL STRATEGY BASED ON EXISTING MILITARY CAPABILITY

Strategies based on existing military capabilities are operational strategies - those that are used as a foundation for the formulation of specific plans for action in the short-range time period. Therefore, operational strategies must be based on capabilities or else the outcomes could be disastrous. In this era of declining defense resources resulting from the collapse of communism, our priorities have shifted from the monolithic threat of the Soviet Bloc to the amalgam of lesser threats and conflicts which seem to occupy a large percentage of Army resources. The two Major Regional Contingencies (MRCs) and CNN-focused conflicts are smoldering hot beds which can, and do, flash up at any moment. Given that the Army is only funded and manned to fight

two simultaneous, or nearly simultaneous MRCs, CAA is continually tasked by HQDA to assess the costs and risks associated with entering numerous combinations of these conflicts.



Counter MLRS II (X-MLRS-II). This analysis provided the Joint Precision Strike Demonstration Office (JPSPD) with an independent evaluation of the destruction of HART sites housing the nK 240mm Multiple Rocket System as well as 2 ID current and future capabilities to deal with an array of different threat systems.

Decision Support Modeling IV - Korea as a Second Major Regional Contingency (DSM IV). This study is an analysis performed in support of the Combined Force Command (CFC) and US Forces Korea (USFK) staffs. This analysis served as the basis for a theater-sponsored seminar and wargame conducted in October and December 1995 respectively. These events supported the CFC and USFK staff assess a theater campaign concept and resource requirements when Korea is the second of two US major regional contingencies (MRCs). Principal excursions conducted during the analysis included different North Korean attack scenarios and US force flows.

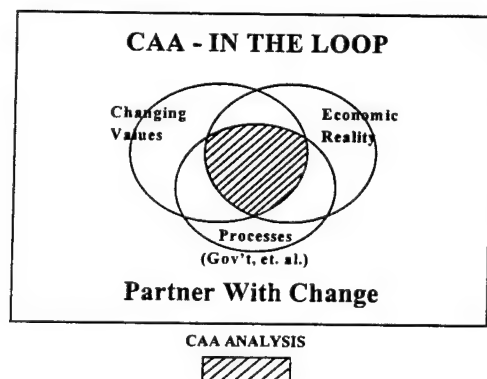
These events supported the CFC and USFK staff assess a theater campaign concept and resource requirements

Wartime Sustainability Review (WSR). WSR is a series of studies that provide a method for evaluating the capability of the Korean Theater Logistics system to provide Class V and VII support theater operations. For a given theater-level campaign, each study investigates the demand of a

given class of systems (Class VII) that is then compared to existing theater stocks (Class V) augmented by resupply. Each study includes slide formats for presenting analysis results to senior decision-makers. WSR studies of artillery, tanks, and helicopters in support of the current OPLAN have been published. Analysis of armored personnel carriers (APC), anti-tank, and mortar systems in support of the current OPLAN are ongoing.

OPTIMAL USE OF RESOURCES

As we try to stretch defense dollars to cover a wider range of threats, the Army has become far more cost conscious. Moving toward cost-consciousness, CAA is often asked to analyze current ways of doing business so that we can squeeze more efficiency out of declining defense budgets. Included in the cost spectrum are environmental concerns which by law and regulation will drive up the cost of defense if neglected. Other major topics under this analysis category are the development of acquisition and investment strategies.



Assessment of Logistics and Costs for Hazardous Materials Management Implementations (ALCHMMI). The Army is currently considering whether or not to implement a Hazardous Materials (HM) Pharmacy System Army-wide. The Air Force and Navy have both reported significant benefits from their respective hazardous material management systems. The Resource Analysis Division of the US Army Concepts Analysis Agency (CAA) was tasked by the Assistant Chief of Staff for Installation Management (ACSIM) and Office of the Deputy Chief of Staff for Logistics (ODCSLOG) to conduct an assessment of hazardous materials management systems DOD wide.

The purpose of the ALCHMMI study was to identify and analyze the costs/benefits associated with implementing a hazardous material Pharmacy System in the Army. The scope of work involved site visits and appraisals of DOD installations with Pharmacy Systems currently in place. The appraisals included an assessment of the installation processes and procedures being directly impacted by the Pharmacy System.

The study determined that most Army installations would benefit from a HM Pharmacy. It was concluded that numerous options exist for a HM Pharmacy and that conducting one cost/benefit analysis would not sufficiently assess the various options. The study team developed a model which can assist installations in assessing their individual costs/benefits associated with a HM pharmacy.

Fleet Age Recapitalization (FAR). This series of five analyses developed a methodology for evaluating the Army's level of modernization, on the basis of fleet age and technology, and for determining the approximate level of RDA funding needed to achieve the Army's long-term modernization goals (covering tanks; infantry fighting vehicles; artillery; helicopters; tactical wheeled vehicles; and command, control, communications and intelligence systems). The methodology was based on a linear program and revolved around a system's Refit or Replace (R2) point.

At each such point in a system's life, a decision must be made to refit (i.e., upgrade) or replace

This is the age at which a piece of equipment will no longer be mission capable in sufficient quantities, will not have sufficient capability or (in the case of combat systems) will not retain a technological advantage over similar equipment. At each such point in a system's life, a decision must be made to refit (i.e., upgrade) or replace (i.e., buy more of the same or to field a new system). Historically, the R2 point occurs at 8-10 year intervals for most systems. The methodology portrayed the impact of alternative R2 decisions over time. Modernization decisions made now will continue to impact readiness over the next 20 years.

Value Added Analysis (VAA). The Value Added Analysis system is intended to address the allocation of investment funds to Army modernization in the current era of diminished resources. The techniques applied cover a wide range of operations research procedures to include simulation, optimization and decision theory. Typically VAA is run every other year and updated in the off years, in support of the POM build cycle.

In FY96, several efforts were accomplished. These include the support to the MiniPOM 97-01--which updated the results of the Phase III study effort, the VAA Phase IV study--in support of the 98-03 POM, and a wide variety of QRAs--which amplified and expanded the Phase IV results. These QRA included the Alternate Procurement Campaigns series (APC I to V), the Partial Modernization Strategy efforts (PMS & PMS (EAGLE)), the Support to the Chief of Staff of the Army's Testimony (SCAT), and the resource portion of the three agency Armor/Anti-armor Requirements and Resource (A2R2) analysis effort.

Each of the QRA series has a different emphasis. The **APC series** explores the ability of the US forces to more quickly modernize, given that the new systems are only targeted to a selected portion of the total Active Army. Equipment production targets were developed by OPA&E and were provided as input to the QRA, based upon an expected redesign of the Army's force packages. This information was then used with a variant of the VAA optimization methodology in order to develop acquisition campaigns which rapidly modernize the Army. An interesting by-product of the APC series was a new, innovative methodology of displaying the decision alternatives in modernization of Army forces and the resulting effects of those decisions.

As a result of the APC series of QRAs, the Director, PA&E, desired to determine the effects of partially modernizing the force on the conduct of theater campaigns in accordance with the DPG. In the initial exploration (theater level) the outcomes were limited to the 2005 time frame by the use of results generated from the SRA-03 study effort. The second effort (corps level) in the PMS series was able to explore both 2005 and 2015 through the modification of the baseline Value Added simulation effort in the EAGLE corps combat model.

Finally, the Value Added Division of CAA generated two major analytical products in support of the

A2R2 effort, an acquisition campaign generator and an affordability excursion. Both products were dependent upon the results of the initial requirements analysis conducted by the TRADOC Analysis Center (TRAC). This procedure took the results from the TRAC analysis and a Military Traffic Management Command - Training Effectiveness Analysis (MTMC-TEA) deployment analysis and combined them with fifteen individual measures of combat effectiveness by using a decision theoretic model of Army leadership preferences. The resulting information was then incorporated with the Army modernization goals, individual system programmatic and budgetary considerations required to develop a sequence of feasible acquisition strategies.

Future efforts in the VAA analytical process are targeted on extending the prioritization system to the full range of modernization packages

The second effort, generated for **A2R2** by VAA, was the CAA affordability excursion, which was designed to identify opportunities to shift Total Obligation Authority (TOA) away from anti-armor mission areas in order to resource other critical budget needs. This excursion was based upon the sequencing of the A2R2 modernization alternatives and searched for sets of candidates which exhibited robust effectiveness across the TRADOC generated families of systems.

Future efforts in the VAA analytical process are targeted on extending the prioritization system to the full range of modernization packages and incorporating the final results of the TRADOC warfighting lens analysis into the optimization process. This augmentation will allow the complete range of Army investment funding to be addressed as the VAA process continues to evolve in the process of supporting the development of the Army's budget submissions.

VAA Army Modernization and Prioritization System (AMPS). In the current era of diminished resources, the VAA series of studies addresses the allocation of investment funds to Army modernization. The techniques applied in the **AMPS** cover a wide range of operations research procedures to include simulation, optimization and decision theory. A shortcoming of the past

iterations of VAA type analysis is the limited number of systems addressed and the restriction to examining only 50% of the available funds. The AMPS augmentation to VAA extends the prioritization system to the full range of modernization packages and allows the complete range of Army investment funding to be addressed. Typically VAA is run every other year and updated in the off years, in support of the Program Objective Memorandum (POM) build cycle.

There are a number of basic methodology reports on the above process which are listed for unlimited distribution. In order to obtain any of the reports identified below, obtain release approval from the Force Development Division of DCSOPS (DAMO-FD) and the Director, Army PA&E must be submitted to CAA.

Value Added Analysis 98-03 (Phase IV). This edition of VAA documents the preliminary work required prior to addressing the real leadership concerns in the development of POM 98-03. As such it discusses the specific changes from the base model used in support of POM 98-03, the conduct and result of the designed simulation experiment, the results of the senior leader surveys and the initial output.

VAA 96-01 Phase III. This next edition provides the same information as the Phase IV report, but as it relates to POM 96-01 also updates the results of Phase III to support the MiniPOM.

The following are the quick reaction analyses performed in support of POM 98-03 and based upon the preliminary work documented in VAA 98-03.

Alternate Procurement Campaigns (APC). This series of QRA was generated as a result of speculation within the Acquisition Support Program Analysis Division of the Program Analysis and Evaluation (OPA&E) Division on the ability of the US forces to more quickly modernize, given that the new systems are only targeted to a portion of the total Active Army. The systems examined were limited to the set of systems examined in the Value Added Analysis (VAA), Phase IV Study, which consisted of the major weapons systems in development. The methodology used to analyze the ability of the new systems to rapidly modernize the selected portions of the Active Army was the VAA optimization methodology, a variant of the capital

budgeting problem for linear programming. Equipment production targets were developed by OPA&E and were provided as input to the QRA, based upon an expected redesign of the force packages of the Active Component of the Army.

APC II concentrates on revised quantities for modernization, as provided by OPA&E. APC III concentrates on reallocation of the Armored Gun System's resources to other projects. APC IV concentrates on tracing the series of decision options required in the building of the Program Objective Memorandum 98-03. APC V concentrates on funding for modernization variants in the building of the Program Objective Memorandum 98-03.

Partial Modernization Strategy (PMS). As a result of the APC series of QRA, the Director, PA&E desired to determine the effects of partially modernizing the force on the conduct of theater campaigns in accordance with the DPG. PMS exploration of the impacts on theater outcomes was limited to the 2005 time frame. Theater conflicts were set in a nearly simultaneous MRC scenario in accordance with the current DPG. Only those future systems explored in COSAGE during SRA-03 were used in examining the partially modernized theater.

Partial Modernization Strategy - EAGLE (PMS-EAGLE). Also as a result of the APC series of QRA, the Director, PA&E, and ODCSOPS desired to determine the effects of a partially modernize force on the conduct of the MRCs in the current DPG scenarios. The initial PMS was able to examine only the 2005 time frame. The PMS-EAGLE QRA examines both 2005 and 2015.

Support to the Chief of Staff of the Army's Testimony (SCAT). The Chief of Staff of the Army (CSA) asserted that the Army did not know what it would buy, even if Research, Development, and Acquisition (RDA) Total Obligation Authority (TOA) was significantly plussed up (i.e., 20B/yr). SCAT provided information to the Force Development Division of DCSOPS (DAMO-FDR) on procurement alternatives to prepare the CSA for testimony on 28 Mar 1996.

The last study identified is a three-agency effort at TRAC, CAA and AMSAA to address armor/anti-armor systems in the development of POM 98-03.

Armor/Anti-armor Requirements and Resource (A2R2). This analysis provides an updated assessment of anti-armor munitions and systems requirements to support the building of the Army's 98-03 Program Objective Memorandum (POM). Armor, in the sense used in "anti-armor" for this study, is defined as lightly armored vehicles, to include self-propelled artillery systems, through main battle tanks. The base case included existing systems in the force and systems that were predetermined to be in the 98-03 POM. The study was divided into two phases to consider the near term (year 2005) and the far term (year 2015). The analysis covered both the close and deep battle problems and, where possible, considered implications of TF XXI concepts. The TRADOC Analysis Center (TRAC) was tasked to conduct a requirements analysis of close and deep systems/munitions in seven high/low resolution scenarios appropriate to contingencies in Defense Planning Guidance. Results were supplied to the US Army Concepts Analysis Agency (CAA) for performance of the resource analysis. The US Army Materiel Systems Analysis Agency (AMSAA) was tasked to perform a performance and sustainability analysis on all systems considered in the requirements analysis. The TRADOC System Managers and TRADOC Schools and Centers participated in the selection of systems for the near and far terms and in the development of employment tactics, techniques and procedures for representation in the combat models. Army Materiel Command (AMC) Program Managers provided data and costs for the systems under review. The TRADOC DCSINT element at Fort Leavenworth provided a review of all scenarios and supplemented the analysis with development of a high technology threat force for the far term.

A2R2 analysis provides an updated assessment of anti-armor munitions and systems requirements to support the building of the Army's 98-03 Program Objective Memorandum (POM).

The methodology for conducting the requirements analysis consisted of running each alternative system or munition in a high resolution (brigade level) model in five scenarios (three heavy and two light) to determine the value added by that system to either the heavy or light ground forces. Systems

that provided a capability for the corps deep battle were also examined in a corps level model in two scenarios. The scenarios were equally divided between Northeast Asia and Southwest Asia. The number of armor kills and the number of US systems/personnel saved were the primary measures of effectiveness. The integration technique for the Brigade resolution and Corps resolution results was to develop the measures in terms of percent increases to the base case for both lethality and survivability. The requirements analysis used data approved by AMSAA and in each scenario employed a far term high technology threat force supplied by the TRADOC DCSINT element at Fort Leavenworth. The results from the model runs were input to the TRAC mix model to establish 1) the optimum family of systems/munitions considering both lethality and survivability and 2) a one-to-n list of systems/munitions considering both effectiveness and cost. The most effective families of systems were rerun in the combat models to adjust coefficients for the synergistic effects of combinations of systems.

The systems performance analysis, conducted by AMSAA, provided a detailed item level perspective on the performance of each anti-armor system considered in the analysis. The AMSAA study provided engagement range capabilities, armor killing effectiveness, and survivability and supportability estimates for each anti-armor system for both the near and far term analysis. In addition, a risk assessment addressing technology maturity was provided for the near term systems. The performance data summaries were supplemented by a consideration of the Force XXI implications on system performance and an overall assessment was made based on the relative ranking of item level performance.

The Value Added Division of CAA generated two major analytical products, an acquisition campaign generator and an affordability excursion. Both products were dependent upon the results of the requirements analysis conducted by TRAC. The acquisition campaigns were based upon a variant of the Value Added Analysis Mixed-Integer Linear Optimization Methodology. This procedure took the results from the TRAC analysis and the MTMC-TEA deployment analysis and combined fifteen individual measures of effectiveness into a single optimization goal. The combination was accomplished by generating a decision theoretic model of Army leadership preferences for improving the effectiveness of Army performance.

The resulting preference information was then incorporated with Army modernization goals, individual system programmatics and budgetary considerations required to develop a sequence of feasible acquisition strategies. The resulting acquisition campaigns were then used to explore the alternative modernization possibilities in building the POM 98-03.

The Value Added Division of CAA generated two major analytical products, an acquisition campaign generator and an affordability excursion.

The CAA affordability excursion was designed to identify opportunities to shift TOA away from anti-armor mission areas in order to resource other critical budget needs. This excursion was based upon the sequencing of the A2R2 modernization alternatives and searched for sets of candidates which exhibited robust effectiveness across the TRADOC generated families of systems.

PLANNING DATA/FACTOR DEVELOPMENT

Within the Army and CAA there is a constant need for current, standard planning data from which we can project future outcomes and requirements. CAA finds itself on the sending and receiving ends of this essential element of Army planning and analysis.

Personnel Attrition Rates in Historical Land Combat Operations (PAR-P3). This fiscal year the CAA research into Personnel Attrition Rates focused on total battle casualties experienced by larger (than tactical) forces. The idea was that estimation of attrition in future combat engagements might be improved if the main features of losses over a span of operational levels were better understood. Noted was the fact that casualty numbers and rates vary widely from nation to nation, theater to theater, and from year to year. Both are strongly affected by dilution and attenuation effects, and most casualty rate distributions are approximately lognormal. It appears that killed-in-action rates are about one-fifth the total battle casualty rate, and that a large fraction of those initially classified as captured or

missing-in-action are later reclassified as killed-in-action. Other insights are noted in CAA-RP-95-5.

Ardennes Campaign of World War II (ARCAS). In FY 96 a multi-year assessment of the credibility of the Stochastic Concepts Evaluation Model was completed. This effort simulated the Ardennes Campaign of World War II and compared the results with historical evidence to determine what, if any, changes to the model were indicated. Principal measures compared included personnel casualties, weapon losses, ammunition consumption, and forward edge of the battle area (FEBA) movement, all areas of interest in POM and OPLAN related analyses supported by campaign simulation at CAA. Noted was a model tendency to overestimate FEBA movement, system losses, and personnel casualties when a large portion of one side is attacking, quite possibly all input data driven. The need to investigate means for representing "breakthrough" was also indicated. Finally, the effort successfully demonstrated that campaign level combat simulation models can be validated against history, and that meaningful insights can be derived from a well designed experiment by adhering to proper scientific analysis procedures.

the effort successfully demonstrated that campaign level combat simulation models can be validated against history

Joint Service Chemical Defense Equipment Consumption Rates Update (JCHEMRATES III). This study, an update of JCHEMRATES I Study, developed chemical defense equipment (CDE) logistic consumption rates for Southwest Asia and Northeast Asia for all four services based on the 1996-2001 Defense Planning Guidance. Theater campaign simulations were conducted using the Force Evaluation Model, current chemical defense doctrine, and Office of the Deputy Chief of Staff for Intelligence estimate of Red force capabilities. No Blue retaliatory attacks were conducted with either chemical or nuclear weapons. For the campaign simulations, both quantities of Red chemical weapons and the effectiveness of the weapons (to simulate weather differences) were varied. The results of the campaign simulations, i.e., casualties (both chemical and conventional), equipment losses, and contamination percentages were used in a spreadsheet integration model which calculated

the total consumption and consumption rates for the selected chemical defense equipment by service.

Political/Economic Risk in Countries & Lands Evaluation (PERICLES). The PERICLES study developed and demonstrated an analytical methodology that incorporates quantifiable measures of risk associated with foreign nations as part of the U.S. Army's overall threat assessment. Various factors contribute to a nation's stability/instability -- economic, political, social-cultural, environmental-infrastructure, and military. This study, conducted for the U.S. Army Office of the Deputy Chief of Staff for Intelligence, included risk indicators for over 200 countries.

The nature of global conflict is changing -- from wars between states to intra-state conflicts. The concept of national security must include protection from internal threats as well as security of territory from external aggression. Internal security threats include those caused by political repression, ethnic/religious diversity, economic disparity, environmental hazards, crime, malnutrition, and disease. A system is needed to identify potential crisis countries in order to apply preventive diplomacy and avoid the requirement for later intervention. Preventive action resulting from the early identification of risks to national stability is more humane and less costly. A new paradigm is needed which evaluates social, political, economic, and environmental threats to national security to complement the traditional military threat assessments. PERICLES addressed this new paradigm. Integral to the project was the development of PREPS (PERICLES Risk Evaluation Presentation System), an information mapping system which displays the PERICLES-calculated country instability results and allows for user interface.

Army Force Planning Data and Assumptions - 2003 (AFPDA-03). The purpose of AFPDA-03 was to acquire and publish official data needed in support of numerous HQDA force development studies. This biennial study is sponsored by the Deputy Chief of Staff for Operations and Plans (ZD) and supplied data to many studies conducted at CAA over the past year.

The final report represents a compilation of approved theater-level campaign data acquired through approximately 30 sources. Examples include US, allied, and threat military force

structure; DPG scenarios; mobilization and deployment data; weapons of mass destruction data; and logistics and infrastructure data. The three volume report is distributed to approximately 200 addressees in either CD-ROM or hard copy format.

TOOL AND METHODOLOGY DEVELOPMENT IN SUPPORT OF OPERATIONAL AND FORCE DEVELOPMENT STRATEGIES

At the base of the CAA study program are models, methodologies and other analytical tools which enable us to produce reliable and sensible answers to a new generation of complex problems and questions unlike those we grew comfortable with during the Cold War.

Interaction between the human and the computer can enhance problem solving by combining human imagination with the power of computer logic.

These activities of problem solving begin with highly non-programmable tasks and progress toward the programmable. But, even after computers and extensive calculations produce results, there is still a need for interpretation of the results, and interpretation is often a non-programmable human activity that requires tacit or intuitive knowledge of what is reasonable and acceptable. The non-programmable tasks in this area include the holistic, global activities involving imagination, values, attitudes, and emotions. The programmable tasks include sequential, step-by-step, detailed algorithms. The programmable and non-programmable interact. At the beginning, the effort is virtually all non-programmable. This is when we rely on political-military workshops and wargames to come up with answers based on knowledge and intuition. At the end, the effort is all programmable. The largest amount of work occurs in the middle, when we have a reasonable initial grasp of the problem. At this stage, we move back and forth, testing our ideas in a form of mental or computer simulation algorithms and using the results to infer global conclusions or to generate

new ideas that lead to changes in the model that we are constructing or updating. Interaction between the human and the computer can enhance problem solving by combining human imagination with the power of computer logic.

Warfighting Analytical Support to the Third U.S. Army (WAS-TUSA). This analysis was and continues to be a joint CAA and TUSA initiative designed to enhance the warfighting analytical support provided and demonstrated during the Gulf War. Unlike CENTCOM, the Third US Army had no organic analytical support cell dedicated to support campaign analysis. Consequently, the purpose of WAS-TUSA is to provide on-site, responsive, real time analytical support to the operational commander for the planning and conduct of combat operations.

Several new and advancements of current, state-of-the-art analytical techniques were incorporated and successfully demonstrated by WAS-TUSA.

The WAS-TUSA team has deployed this warfighting analytical support capability with ARCENT on several joint and combined exercise - ROVING SANDS (Ft Bliss, TX - Mar 95), BRIGHT STAR 95 (Egypt - Nov 95), INTERNAL LOOK (Camp Blanding, FL - Mar 96). The team has been utilized to conduct Course of Action (COA) assessments, force allocation analysis, as a command post exercise 'driver', OPLAN development and force requirements analysis. During these exercises, the WAS-TUSA team typically was able to receive a COA, conduct the COA assessment, pre process - wargame - post process, and provide results in a decision brief quality format in 2 - 3 hours. Using only one of the two laptops for modeling, the team averaged 12 CEM runs and completed 4 COA assessments a day. When both laptops are used these rates almost double. This is a significant improvement since Desert Storm - The process typically took 5 days per COA, averaging 2.5 CEM runs a day.

Several new and advancements of current, state-of-the-art analytical techniques were incorporated and successfully demonstrated within WAS-TUSA. Each significant in and of itself, collectively they serve as a landmark for leveraging technology as the Army moves into the 21st century.

WAS-TUSA is a demonstrated warfighting analytical support capability that may well serve as a technological landmark as the Army moves into the 21st century. LTG Arnold, Commanding General ARCENT, describes the capability provided by WAS-TUSA as "truly revolutionary, significant and influential ." Further, he states that "... this capability could and should soon be proliferated to corps and divisions." In addition to ARCENT, WAS-TUSA has assisted the operational planning for CENTCOM and the I Marine Expeditionary Force and has been requested to provide support to the School of Advanced Military Studies (SAMS) and the Army War College (AWC).

COSAGE Process Improvement. The process for developing combat samples for combat attrition calculations in campaign level simulations such as the Concepts Evaluation Model, TACWAR (Joint model), and Thunder (Air Force model) was completely re-engineered during FY 1996. These improvements involved both time-saving measures and the addition of new military doctrine and tactics to redefine combat samples in light of a changing Army. Because of new software and automated error-checking routines, complete sample sets for multiple MRCs were developed, tested, analyzed, and furnished to the campaign simulation teams in less than two months, improving on the previous effort by nearly 20 percent.

Total Army Analysis FY 2005 (SRA-05C). Combat samples for CAA's support to the Support Force Requirements Analysis (SRA 05) incorporates for the first time a comprehensive Deep Strike capability, a new Defense Light Less Intense posture for improved campaign support, automated K-Kill updates for use in both major regional contingencies, and upgraded terrain representation for one theater. These enhancements also used results from an analysis for an Advanced Concepts Technical Demonstration (ACTD) for Deep Fires on 2nd Generation Forward Looking Infrared Radar, product improved Fire Finder Radar, Predator Airborne Vehicles, nK 240 MRL capabilities and BLACK TAC "prototype" for use as a leave-behind system.

The Deep Strike combat sample incorporates USAF Aircraft, Comanche, AH-64D, ATACMS, and Extended Range MLRS as shooters. Future enhancements will include B-52 and Cruise Missile strikes. The new Defense Light Less Intense posture

is more representative of campaign periods reflecting greater time for force reconstitution and refitting. K-Kill updates help to realistically portray (through an extensive data base operation) that portion of a target set determined to be non-repairable because of catastrophic damage. The methodology developed to utilize the Army standard Digital Terrain Elevation Data (DTED) enhanced our understanding of target acquisition in a desert environment and its modeling in the combat simulation.

Evaluation of Land Value Study (ELVS). The purpose of ELVS was to develop and demonstrate a methodology for estimating the operations and support (O&S), land management costs associated with using land at selected Army installations to train ground forces. The Deputy Chief of Staff for Operations and Plans (DCSOPS) directed that operational readiness reflect the total cost of going to war, including planned training operational tempo (OPTEMPO) and all associated costs. To accomplish this objective, the costs of using land for training purposes, a critical component of OPTEMPO, should be incorporated in the total cost of preparing a unit to go to war. ELVS provides a methodology that incorporates O&S costs of using land for ground forces training.

(DCSOPS) directed that operational readiness reflect the total cost of going to war, including planned training operational tempo (OPTEMPO) and all associated costs.

Eight types of Active Army battalions that incorporate the key pacing items were used for the ELVS case studies. Training sites at Ft. Hood and the Combat Maneuver Training Center (CMTC) were used to demonstrate the methodology. Current Army training strategy and policy determine the recommended amount and type of training that each type unit must accomplish. The Battalion Level Training Model (BLTM) is used as the basis for calculating the maneuver impact miles (MIMs), a direct measure of training land usage in the ELVS methodology. Training impact factors were developed so all training could be normalized to a standard unit in a standard event. Erosion status is used as quantitative measure of land condition and of training land capacity. The relationship between

erosion status and MIMs was established. Training land carrying capacity standards were established consistent with Installation Status Report C-Ratings. Land Management practices and costs for each practice were identified for Fort Hood and CMTC Hohenfels. Annual resources required to address shortfalls in training land standards were identified. Costs per mile to achieve desired levels of erosion status were also identified for eventual inclusion in the Operating and Support Management Information System (OSMIS) cost factors.

Matching Army Requirements To Yearly Resources (MARTYR). This QRA was sponsored by the Deputy Chief of Staff for Operations & Plans (SSW) in order to develop an automated tool that can compare multiple Time-Phased Force and Deployment Data (TPFDD) files and identify if the Army has the resources to simultaneously fulfill the TPFDDs.

MARTYR is used to determine if the Army has the resources to simultaneously fulfill any number of TPFDDs. The model uses the SAMAS (Structure and Manpower Authorization System) as the resource file and then draws units from it as they appear in a TPFDD. If a unit is in more than one TPFDD, MARTYR will attempt to find a substitute unit for the second and any other subsequent requests. Failing to find a substitute, MARTYR will place that unit in an unresourced file. MARTYR's output consists of a resourced file by method (exact match, or substitution) and an unresourced file. MARTYR's automation process allows CAA to do multiple TPFDD analyses in days rather than weeks.

Deep Attack Weapons Mix Study Support. The Deep Attack I Weapons Mix Study (DAWMS) was a joint study under the sponsorship of the Joint Staff (J-8) and the Office of the Secretary of Defense (ASD Strategy and Requirements). The purpose of the study was to identify more cost effective mixes of weapon systems and munitions across service boundaries and is indicative of an emerging trend toward joint analysis. CAA's role in the study has been in two areas. First, it has assisted the joint analysis community in addressing some of the difficult technical obstacles joint modeling and analysis present. Second, it has completed detailed analysis in support of important issues that could significantly impact the Army of the future.

In the area of technical challenges, CAA developed a decision analytic model that identifies the relative value of destroying targets across multiple battlefields. This model was accepted by all of the services and forms the basis for the objective function in a mathematical optimization that looks across services. Additionally, CAA has provided mathematical programmers to assist the Institute for Defense Analysis in refining the mathematical optimization.

...it has completed detailed analysis in support of important issues that could significantly impact the Army of the future.

To assure Army doctrine, capabilities, and weapon systems are accurately modeled in the DAWMS Study, CAA has acquired the TACWAR simulation and is evaluating the DAWMS campaigns, modeling, and data. This analysis has been a continuing effort throughout the fiscal year, and will likely continue for the foreseeable future.

OTHER ITEMS OF SPECIAL INTEREST

NATIONAL & INTERNATIONAL MILITARY OPERATIONS RESEARCH ACTIVITIES

CAA engages in a host of activities involving the national and international exchange of professional information and techniques; the professional development of analysts; the promotion of research and development efforts in the field of military operations research; and the application of advanced technologies. Collectively, these efforts help maintain the expertise and essential analytical perspective important for understanding and analyzing current issues. Some of the more notable of these activities are identified in this section.

- ♦ Seventh US/French Operations Research/Simulation at Centre for Defense Analyses, Paris. Mr. Whitley organized US participation.

- ♦ US/Canadian Symposium on Operations Research at National Defence Headquarters in August 1996. CAA attendees/participants included Mr. Vandiver (Director, CAA); Mr. Elliott (Chief, Conflict Analysis Center), and Mr. Whitley (Chief, Tactical Analysis Division & US organizer). Mr. Elliott presented an overview of political-military gaming activities at CAA. Several joint activities are expected to spin off from the symposium, and current plans are to continue in a home-and-away series.

- ♦ Mr. Whitley, Chief, Tactical Analysis Division organized a second US/German Workshop on Operations Research to be held at Ottobrunn 1-3 October 1996. Focus of the presentations will be the application of simulation technology planning and training. The Director is scheduled to present an overview of the Ardennes Campaign Simulation effort completed this year.

- ♦ Mr. Vandiver was elected to Military Operations Research Society (MORS) Fellow (lifetime membership) status at the December 1995 MORS Board of Directors meeting.

- ♦ Mr. Vandiver continues to serve as Assistant Technical Project Officer (ATPO) for the Information Exchange Annex between the US and the UK, and Mr. Whitley serves as ATPO for Data Exchange Annexes between France and the US, and the Netherlands and the US.

- ♦ Mr. Whitley, Chief, Tactical Analysis Division, continued participation on the Board of Directors of MORS. Calendar year (CY) 95/96 responsibilities included chairing the Audit Committee and work on the Membership Committee. CY 96/97 efforts include chairing the Membership Committee and assisting in organizing the Junior/Senior Analyst Sessions at the next Symposium (Quantico).

- ♦ Mr. Shedlowski, Technical Director, and Mr. Elliott, Chief, Conflict Analysis Division, presented papers at the Japan/US Operations Research Symposium in Japan.

FOREIGN VISITORS AND DIGNITARIES

CAA has always participated with foreign nations in the exchange of knowledge and information in the area of military operations research. The emergence

of a new world order however, has served to magnify the importance of these ongoing dialogues. The new world order necessitates that allied nations continue to share information because if recent trends continue, ad hoc coalitions and alliances will be the order of the day when it comes to settling international conflicts. To that end, CAA was privileged to host the following list of dignitaries:

Australia:

- ♦ MAJOR Christopher Mazur, Force Development (land) Branch, Headquarters Australian Defence Force.

Canada:

- ♦ Mr. Gilbert LaFond, Department of National Defence.
- ♦ Mr. David Mason, Department of National Defence.
- ♦ Dr. Philip F. O'Neill, Department of National Defence.
- ♦ Dr. Jacques Levigne, Attache Staff, Embassy of Canada.
- ♦ MAJ Peter G. Harbert, Department of National Defence.

Germany:

- ♦ MAJ Michael Abend, Federal Armed Forces Medical Academy.
- ♦ MAJ Walter Biederbick, Federal Armed Forces Central Hospital.
- ♦ Dr. Ernst-Juergen Finke, Federal Armed Forces Medical Academy.
- ♦ Lt Colonel Karl-Heinz Molz, Federal Armed Forces Medical Academy.
- ♦ COL Torsten Sohns, Office of the Surgeon General, Federal Armed Forces.
- ♦ Dr. Josef Loscher, Academy Gut Tossem.

Greece:

- ♦ Lt Colonel Emmanouil Barnias, Defense Attache Office, Embassy of Greece.

Japan:

- ♦ MAJ GEN Takashi Arai, Director, Plans and Operations Department, Japanese Ground Self Defense Force.
- ♦ COL Shunichi Nito, Military Attache, Embassy of Japan.
- ♦ Lt Colonel Sadafumi Fujii, Assistant Military Attache, Embassy of Japan.
- ♦ Lt Colonel Hitoshi Kawamura, Defense Planning Division, Japanese Ground Self Defense Force.
- ♦ MAJ Yuichi Yatamaru, Defense Plans and Operations Division, Japanese Air Self Defense Force.
- ♦ CPT Kazuhiro Matsumura, Program Management Group, Japanese Air Self Defense Force.

Korea:

- ♦ Lt Colonel Sang Heon Lee, Material Analysis Officer, ROK Army Staff.
- ♦ Dr. Tai Young Kwon, Senior Researcher, Korea Institute for Defense Analyses.
- ♦ Dr. Choon Il Chung, Research Fellow, Korea Institute for Defense Analyses
- ♦ Dr. Sung Bin Choi, Chief, Defense Industry and Technology Division, Korea Institute for Defense Analyses
- ♦ Dr. Sung Woo Nam, Senior Researcher, Korea Institute for Defense Analyses
- ♦ Dr. Yong Chan Jung, Associate Research Fellow, Korea Institute for Defense Analyses (Began a five month visit to the Agency under the US/ROK Engineer and Scientist Exchange Program in September 1996).

Portugal:

- ♦ COL Mario De O. Cardoso, Military Attache,
Embassy of Portugal.

Singapore:

- ◆ COL Hee-Hon Pang, Assistant Chief of the General Staff (Plans), Singapore Armed Forces.
- ◆ MAJ Chen-Guan Wong, Head, Army Operations Analysis Branch, G5, Singapore Armed Forces.
- ◆ CPT Kim-Pong Ong, Senior Analyst, Singapore Armed Forces.
- ◆ Mr. Kah-wah Lai, Systems and Computer Organization, Ministry of Defence.

Spain:

- ♦ COL Rafael Barbudo, Military Attache, Embassy of Spain.

United Kingdom:

- ◆ Mr. Andrew Sleight, Managing Director, Centre for Defence Analysis.
- ◆ Dr. Roger Forder, Chief Analyst, Centre for Defence Analysis.
- ◆ Mr. David J. Baker, Defence Equipment Joint Technologies, Embassy of the United Kingdom.
- ◆ Lt Colonel Clive Burt, Atomic Weapons Establishment.
- ◆ COL Robert Leitch, British Army Staff, Embassy of the United Kingdom.
- ◆ Dr. Brian Pierce, AEA Technology/Radiac Project Office.



PROFESSIONAL SOCIETIES

AORS XXXIV - 11-12 October 1995; Fort Lee, VA. The US Army Operational Test and Evaluation Command (OPTEC) sponsored this annual event. CAA personnel made the following presentations:

<u>Presenter</u>	<u>Topic</u>
Dr. Elizabeth Abbe	Global Defense Analysis System (Reception, Staging, Onward Movement & Integration)
Ms. Julianne Allison	Mobilization Capabilities Evaluation Model Update
LTC Andrew Loerch/ Ms. Patricia Murphy	Optimization of Deployment Enhancement Projects for the U.S. Army (PASMPR)
LTC Andrew Loerch	Value Added Analysis DSS Development - An Update
Mr. Joel S. Gordon	Peacekeeping Cost Analysis (PECAN)
Mr. James Connelly	Planning Environmental Resource Strategy Evolution and Utilization Study (PERSEUS)
Dr. Robert Schwabauer	Synthesizing Energy Worth (SEW)
Mr. Karsten Engelmann	EAD Campaign Analysis Integration
Dr. Robert Helmbold	Defender's Advantage As An MOE
Dr. Robert Helmbold	Personnel Attrition Rates in Land Combat Operations
LTC Bruce Mamont	Non-Lethal Weapon Employment (NLWE)
LTC Robert Alexander	System Evaluation in EAGLE
LTC James Stevens	Ground Maneuver JWCA Methodology
Mr. Hugh Devlin	War Fighting Analytical Support to Third US Army

Mr. John Elliott/ Dr. Richard Darilek	Joint ROK-US Regional Arms Control Project (JKRACS)
MAJ Seven Sellen	Nigeria 95
Ms. Renee Carlucci	Reception, Staging, Onward Movement, and Integration Operations
LTC Joseph Manzo	Force Analysis Spreadsheet Tool OOTW Requirements (FAST-OR)
Mr. John E. Shepherd	Advanced Regional Exploratory System (ARES)

64th MORS Symposium - 18-20 June 1996; hosted by the TRADOC Analysis Center, Fort Leavenworth, Kansas. Fifteen papers were presented and eleven CAA personnel accompanied Mr. Vandiver to this annual event. The presenters and papers were:

<u>Presenter</u>	<u>Topic</u>
Ms. Julianne Allison	Mobilization Capabilities Evaluation Model Update
Ms. Pamela Roberts	Integrated Theater Missile Defense-Capability Assessment (ITMD-CAP)
Mr. Karsten Engelmann	Active, Passive, Attack, BMC4I- Pillar Integration
Dr. Robert Helmbold	Recent Technological Advances in the Theory of Volley Fire
Dr. Robert Helmbold	Recent Technological Advances in the Quantitative Analysis of Historical Data on Combat Operations
Dr. Robert Helmbold	Recent Technological Advances in Measures of the Effectiveness of Combat Forces
Mr. Walter J. Bauman	Ardennes Campaign Simulation (ARCAS)

LTC Robert Alexander	Representing Information Warfare in a Corps-Level Combat Model
LTC Forrest Crain	Warfighting Analytical Support to Third US Army (WAS-TUSA)
LTC Forrest Crain	ARCENT Support: Threat Deployment Risk Analysis & Course of Action Assessment
LTC Daniel Maxwell	What is the Value of Destroying a Target?
LTC Daniel Maxwell	Prioritization System and Value Added Analysis (AMPS & VAA)
Mr. Steven Siegel	Evaluation of Land Value Study
Mr. Ted Ahrens	Political/Economic Risk in Countries and Lands Evaluation Study (PERICLES)
Mr. James Connelly	Yearly Analysis of Technology for Installation Readiness Prioritization (YATIRP)

Best Working Group Paper

LTC Forest Crain received the award for Best Working Group Paper for Working Group 32, Advanced Analysis, Technologies, and Applications.

PRESENTATIONS AT OUTSIDE FORUMS

Institutes for Operations Research and Management Science (INFORMS), October 1995, Washington, D.C.:

LTC Daniel T. Maxwell coordinated the Decision Analysis Special Interest Group for this Symposium and presented the following two papers:

- Army Modernization Prioritization System.
- Explicitness in Governmental Decision-Making: An Insider's Perspective.

Institutes for Operations Research and Management Science (INFORMS), October 1996, in New Orleans, Louisiana. LTC Maxwell presented:

- NBC Modernization Prioritization Methodology.

Cornwallis Group Annual Conference, March 96. LTC Maxwell presented:

- Supporting Decision Makers in Future Conflicts: A Decision Theoretic Perspective.

AWARDS AND RECOGNITION

Army Study Highlights (ASH), Volume XV. The following CAA studies were recognized for excellence and published in ASH Vol XV:

Study Director(s)	Study Title
LTC Michael Leibel	Pollution Abatement and Prevention Analysis Study (PAPA)
LTC Roger Pudwill	Reserve Component Training Installation Facility Yearly Requirements Study (RCTIFYRS)

Dr. Wilbur B. Payne Special Award - 1996. In addition to the annual Dr. Wilbur B. Payne award, CAA was presented with a special award for the "Army's multiple-agency collaborative" Anti-Armor Requirements and Resource Analysis. This analysis was a combined effort between AMSAA, TRAC, and CAA.

CAA Team Members:

LTC Rodger Pudwill	LTC Daniel Maxwell
Mr. Joe Gordon	Mr. Mark Clements
Ms. Kumud Mathur	Mr. Andrew Kourkoutis
Ms. Ola Berry	Ms. Linda Coblentz

Dr. Wilbur B. Payne Memorial Award - 1996. The studies listed below were *nominated* to receive the Dr. Wilbur B. Payne Memorial Award in 1996 in their respective categories. Nominations were limited to one per category.

Group Award: Warfighting Analytical Support to the Third U.S. Army (WAS-TUSA)

-Operations Capabilities Assessment, SWA Division

Individual Award: Active, Passive, Attack Operations, Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)-Pillar Integration (APAB-PI)

- Mr. Karsten G. Engelmann

FY95 Study Directors' Luncheon. CAA held this annual luncheon on Tuesday, 14 November 1995 to honor individuals who served as study directors for studies and other analytical efforts completed during FY95. The guest speaker was Dr. Darrell W. Collier, Chief Scientist, USA Space & Strategic Defense Command. Certificates of Achievement were awarded to 18 individuals who had directed a total of 37 studies and quick reaction analyses; Certificates of Accomplishment were awarded to 15 individuals who had directed 25 projects and research and analysis activities. These awards were presented to a total of 29 individuals.

The Director's Award for Excellence. The 23rd Annual Dinner Dance was held on 1 April 1995. As in past years, this event was the venue for presenting the Director's Award for Excellence. The Director hosted this annual event and presented the Director's Award for Excellence to the following individuals:

Individual Support Award: Mr. John W. Warren
Individual Analyst Award: Mr. Walter J. Bauman

Team Award:

Warfighting Assessment For Third US Army

COL James L. Hillman	Ms. Susan F. Rodtang
LTC William F. Crain	Mr. John W. Buchanan
MAJ David M. Seitz	Ms. Kathleen P. Le
Mr. Martin L. Dwarkin	Mr. David N. Smith
Mr. William T. Allison	Mr. Giles D. Mills III
Ms. H. Colleen Lewis	Mr. L. Hugh Devlin
Mr. Frank O. Gould	Ms. Margaret M. Loudin
Mr. Robert E. McConnell, Jr.	

Individual Performance Awards. CAA leadership recognizes excellent performance through a robust awards program which even in lean times is used to promote productivity and quality by rewarding high personal achievement. The following awards were given in recognition of past performance and concomitant gains to CAA and the US Army, now and in the future.

Military Awards

Military Service Awards. FY96

Army Commendation Medal:	0
Meritorious Service Medal:	10
Legion of Merit:	0

Military Retirement Awards.

Meritorious Service Medal:	4
Legion of Merit:	3

Total Military Awards:	17
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Civilian Awards

Superior Civilian Service Award:	3
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Achievement Medal for Civilian	
Service Award:	3
Quality Step Increase:	25
Performance Award:	61
Special Act Award:	5
Time Off Award:	0
On-the-Spot Cash Award:	4

Total Civilian Awards:	101
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PUBLISHED ARTICLES AND REVIEWS

CAA emphasizes the importance of actively participating in the scientific advancement of operations research. In FY96 our technical staff had/has 2 articles in various stages of publication in refereed journals. They are:

LTC Daniel T. Maxwell:

Supporting Decision Makers in Future Conflicts: A Decision Theoretic Perspective. In Proceedings of the 1996 Cornwallis Group Conference, Pearson Press, 1996.

Mr. Karsten G. Engelmann:

Pre-Positioning Attack Helicopters Afloat, Military Review, May-June 1996, pp. 79-83.

PUBLICATIONS PENDING

LTC Daniel Maxwell, with Dennis M. Buede: Composing and Constructing Value Focused Influence Diagrams: A Specification for Decision Model Formulation. Submitted to Management Science.

Analysts have had their written critiques of operations research-related publications published. They are:

Reviewed by Dr. Charles Leake:

Advanced Calculus with Applications in Statistics, by Andre I. Khuri.

Fundamental Structures of Algebra and Discrete Mathematics, by Stephan Foldes.

Discrete Choice Theory of Product Differentiation, by Simon P. Anderson, Andre DePalma, and Jacques-Francois Thisse.

Interactive Decision Making: The Graph Model for Conflict Resolution, by Liping Fang, Keith W. Hipel and D. Marc Kilgour.

The Cooperative Nature of the Firm, by Tatsuro Ichtishi.

Markets, Risk and Money, by Bertrand R. Munier.

CAA MANAGEMENT PLANNING CONFERENCES

17 October 1995, 31 January 1996, 24 April 1996, and 30 July 1996. Technology advances and knowing how to set up and manage an organization used to be enough to increase productivity. However, something previously as simple as defining your outputs is now more difficult in the Information Age. Furthermore, innovation where the customers' demands are not clear is extremely difficult. So knowing what your customer wants and measuring how well you are performing against that standard is doubly difficult, requiring a stepped-up planning and evaluation program. With that in mind, we doubled the number of Management Planning Conferences in FY96.

Special emphasis topics which resonated throughout the year were as follows:

***ADP Modernization;** including an increase in micro-computing power that has made off-site connections to the CRAY supercomputer virtually a thing of the past. Improvements to the CAA network also stood out this year. (see Chapter 4)

***Long Range Acquisition Scenarios;** mostly concerned with technology acquisition and the means to implement the various scenarios.

***CAA's Administrative Activities Reinvention Support (CADRES).** This project was initiated in order to reinvent and/or automate the Agency's major study program administrative activities. The goal is to improve the efficiency and standardization of study program administrative activities. To date the Travel process has been reviewed and recommendations for improvement have been made and are being implemented.

***Activity Based Cost System (ABCS).** The Activity Based Cost System project was initiated to develop and demonstrate CAA's Activity Based Costs. This project is complete and Activity Based Costing has been incorporated into our quarterly reporting to CAA's Leadership Team.

***Relocation to Ft. Belvoir.** The relocation of CAA to Ft. Belvoir is currently scheduled for August 1998.

***CAA Analytic Support to HQDA;** highlighted by major HQDA force requirements efforts, theater analysis modernization, and CAA's role as a combat support element to the HQDA and CINC contingency planners.

***CAA Mission Expansion;** featuring an absorption of the Logistics Evaluation Agency currently in New Cumberland, Pennsylvania including the fifteen spaces which will transfer with this mission coinciding with our move to Ft. Belvoir in FY98.

As in the past two years, each division chief briefed his/her management initiatives which will advance the cause of CAA as a Reinvention Laboratory.

SUMMARIES OF FY96 CAA ANALYTICAL EFFORTS

STUDIES

Assessment of Logistics & Costs for Hazardous Materials Management Implementation (ALCHMMI)

Analyzes the cost/benefits associated with implementing the hazardous material pharmacy system in the Army. The POC for further information is Mr. Gordon, US Army Concepts Analysis Agency, DSN 295-0450.

Active, Passive, Attack, BMC41 - Pillar Integration (APAB-PI)

Examines the effectiveness of various mixes of active defense, passive defense, attack operations, and battle management, command, control, communications, computers and intelligence systems in countering theater missile threats. The POC for further information is Mr. Engelmann, US Army Concepts Analysis Agency, DSN 295-1501.

Ardennes Campaign Simulation - Follow on (ARCAS-FO)

The project continues research into results of the ARCAS study and conducts further analysis into areas of interest or anomalies. The POC for further information is Mr. Bauman, US Army Concepts Analysis Agency, DSN 295-0308.

Decision Support Modeling IV - Support for CFC/USFK J-5 (DSM IV)

This is a continuation of operations analysis done for the United States Forces Korea staff. This effort looks at the dual MRC scenario with updated assumptions and conditions for the Korea campaign. The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

Evaluating Land Value Study (ELVS)

Develops and demonstrates a methodology for estimating the operations and support costs of using land at Army installations for the training of ground forces. The POC for further information is Mr.

Siegel, US Army Concepts Analysis Agency, DSN 295-5289.

Integrated Theater Missile Defense - Capability Assessment (ITMD-CAP)

(1) Determines capabilities of the Joint & Combined active defense forces defending Northeast Asia in countering current & future missile threats. (2) Determines the impact on the theater campaign of improvements in TMD BM/C3I capabilities. (3) Determines the impact on the theater campaign of improvements in TMD attack operations. The POC for further information is Ms. Roberts, US Army Concepts Analysis Agency, DSN 295-1652.

Joint Service Chemical Defense Equipment Consumption Rates III (JCHEMRATES III)

Develops revised Chemical Defense Equipment (CDE) consumption rate data based on the current Defense Planning Guidance (DPG) force levels and arrival times for a dual MRC, near simultaneous scenario. The POC for further information is CPT Harris, US Army Concepts Analysis Agency, DSN 295-1263.

The Battle of Kursk, Southern Front - Phase III (KURSK III)

This project completes research into the Battle of Kursk, translation of data from German/Russian sources into machine usable form; and documents the product. The database is intended to support analyses of campaign level simulations of armor heavy campaigns. The POC for further information is Mr. Whitley, US Army Concepts Analysis Agency, DSN 295-1611.

Impact of Army CSS on Warfighting Capability (LOGWAR)

In the context of the TAA-03 nearly simultaneous dual MRC scenario: measures the impact of CSS units on campaign results; assess the capability of a CSS resourced force to meet combat demands; optimize the allocation of scarce logistic resources across multiple theaters; and provides an analytical basis for establishing modernization priorities. The

POC for further information is Mr. McConnell, US Army Concepts Analysis Agency, DSN 295-6960.

NBC Casualty Assessment Study (NBCCAS)

Develops a methodology that includes NBC weapons effects casualty estimation for theater level operational planning; develops estimates for personnel casualties caused by NBC effects in specified regional contingencies; determines personnel, medical, & mortuary affairs support requirements based on regional contingency casualty estimations. The POC for further information is Mr. Barrett, US Army Concepts Analysis Agency, DSN 295-1655.

Nuclear Impact Assessment - 2 (NIA-2)

Explores the impacts that enemy use of non-strategic nuclear weapons has in a specific theater of operations. Assesses BLUE non-strategic nuclear responses and identifies how an Army land component commander would request such a mission. The POC for further information is Mr. Barrett, US Army Concepts Analysis Agency, DSN 295-1655.

Personnel Attrition Rates in Land Combat Operations, Phase 3 (PAR-P3)

Summarizes and documents the available historical data on personnel losses of Army forces engaged in large-scale land combat operations; provides an addenda to the previously published PAR; an Annotated Bibliography; and plans for the conduct of Phase 4. The POC for further information is Dr. Helmbold, US Army Concepts Analysis Agency, DSN 295-5278.

Prioritization of Army Strategic Mobility Project Resources (PASMPR)

Develops and applies a methodology to assist in determining relative priorities of Army Strategic Mobility Program (ASMP) initiatives competing for available funds. Also, determines how best to allocate funding increments and developments as they occur. The POC for further information is Ms. Murphy, US Army Concepts Analysis Agency, DSN 295-5294.

Political/Economic Risk in Countries & Lands Evaluation (PERICLES)

Develops and demonstrates an analytic methodology that incorporates quantifiable measures of political and economic risk associated with foreign nations as part of the Army's overall threat assessment. The POC for further information is Mr. Ahrens, US Army Concepts Analysis Agency, DSN 295-1056.

Planning Environmental Resource Strategy Evolution & Utility Study (PERSEUS)

Uses Pollution Abatement and Prevention Analysis (PAPA) methodology to formulate and analyze investment strategies which support the Army's environmental policy and program requirements. The POC for further information is Mr. Connelly, US Army Concepts Analysis Agency, DSN 295-1682.

Support Force Requirements Analysis-2003 (SRA-03)

Determines Echelon Above Division (EAD) Combat Support and Combat Service Support (CS/CSS) force structure required to support programmed combat forces in the Defense Planning Guidance Major Regional Conflict (DPGMRC) scenarios; likely campaign outcomes, and impact on Operations Other Than War (OOTW) scenarios. The POC for further information is Mr. Stoll, US Army Concepts Analysis Agency, DSN 295-2088.

SRA-05 COSAGE (SRA-05C)

Develops combat samples for SRA-05 for Korea and Southwest Asia theater conflicts. The POC for further information is CPT Mauk, US Army Concepts Analysis Agency, DSN 295-1645.

SRA-05 MRC(NS) Base Case Campaign Development (SRA05-BC(NS))

Develops campaign plan for SRA-05 MRC-East near simultaneous based on DPG/IPS in support of TAA-05. Developed campaign plan will be used in campaign simulation phase. The POC for further information is LTC Orloff, US Army Concepts Analysis Agency, DSN 295-6933.

**Army Program Value Added Analysis 98-03
(VAA 98-03)**

Further develops the VAA capability to include all appropriate hardware, software, and interfaces developed in VAA 96-01; provide feasible acquisition alternatives for major end item systems proposed by the HQDA Long-Range Research, Development, and Acquisition Plan; and performs the preliminary analysis to provide analytical support to the Oct 95 POM. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

**Wartime Requirements Near Term Simultaneous
Dual MRC, FY2003 (WARREQ-03)**

Provides DA DCSOPS with Class V & VII requirements based on campaign analysis of a dual MRC (West then East) scenario. The POC for further information is Mr. Gould, US Army Concepts Analysis Agency, DSN 295-6955.

QRA

Anti-Armor Munitions Requirements (A2MR)

Supports the Joint Staff J-8 Anti-Armor Munitions Study to provide information on SRA-03; force Structures; force pre-positioning, arrival, and flow; enemy offensive; allied counteroffensive; and general concept of operations. The POC for further information is COL Hillman, US Army Concepts Analysis Agency, DSN 295-0578.

**Anti-Armor Requirements & Resource Analysis
Study (A2R2)**

Examines the candidate systems in a Value Added Analysis effort to address armor/anti-armor systems in building the 98-03 POM. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

**Army Attack Operations-North East Asia 2002
(AATOP-02)**

Determines the contribution of Army attack operations in countering theater missile threats.

The POC for further information is Mr. Ogorzalek, US Army Concepts Analysis Agency, DSN 295-1697.

**Assessment of Banning Anti-Personnel Mines -
SWA (ABAPM-SWA)**

Develops a theater level assessment of the impact banning anti-personnel mines has on the conduct of the theater campaign. Assessment takes the form of changes to personnel losses, equipment losses, and accomplishment of campaign objectives in terms of time and terrain. The POC for further information is LTC Crain, US Army Concepts Analysis Agency, DSN 295-1581.

**An Examination of Alternative MDSQ Factors
(AEA-MDSQ)**

Provides an evaluation of Minimum Distribution Systems Quantity (MDSQ) factors. Develops high and low MDSQ values for major weapon system munitions and compares to base case. The POC for further information is Ms. Lewis, US Army Concepts Analysis Agency, DSN 295-6959.

**Assessment of Military Units with Spreadsheet
Effort (AMUSE)**

Analyzes the potential impact on Military Police force structure for TAA-05 using newly developed allocation rules. The result of the analysis assists the sponsor's decision-making efforts. The POC for further information is Mr. Mills, US Army Concepts Analysis Agency, DSN 295-5534.

**Alternate Procurement Campaigns
(APC 1 thru 4)**

A suite of QRA that examines the effects on the list of recommended systems when designated systems are allowed alternate production rates and production goals are set which only modernize a portion of the total force. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Army Battalions (ARBATTS)

Provides MOEs and graphics displaying the resultant alternatives when there is a reduction of armor forces available to conduct combat operations in scenarios utilized in the Value Added Analysis

study effort. The ARBATTs analysis is to answer issues on force size requirements. The POC for further information is LTC Bailey, US Army Concepts Analysis Agency, DSN 295-1654.

**Army Strategic Planning Workshop - 1996
(ASP 96)**

Validates concept for re-engineered Army long-range planning process. It tests the Army Staff's strategic planning methodology; identifies shortfalls that require corrective actions in methodology; and assists the Army Staff in refining a draft AR 11-32. The POC for further information is Ms. Sharkey, US Army Concepts Analysis Agency, DSN 295-4715.

Bosnia, SWA Scenario (BOSS)

Identifies possible shortages in a LRC-MRC scenario, and a LRC-MRC Natural Disaster scenario, by comparing the units requested of each contingency with the units available for deployment. The POC for further information is MAJ Aviles, US Army Concepts Analysis Agency, DSN 295-5291.

Brown and Root Substitution Analysis (BRSA)

Determines the below the line force structure needed to conduct the missions Brown and Root have been contracted to do. The POC for further information is MAJ Aviles, US Army Concepts Analysis Agency, DSN 295-5291.

**Cost Analysis Tool-Estimate Light Operations
Peacekeeping Scenarios (CANTELOUPES)**

Develops linked EXCEL spreadsheet model that provides total incremental cost to Operations Other Than War (OOTW) for units considered in the CAA Force Analysis Spreadsheet Tool - Operations Other Than War Requirements (FAST-OR). The POC for further information is Mr. Gordon, US Army Concepts Analysis Agency, DSN 295-0450.

**Casualty Estimation w/in CS & CSS Functional
Areas (CAS-TO-SPT)**

Provides a detailed analysis of the Army's Theater-level casualty estimation process with the objective to identify the means by which casualty estimates are developed for all non-combatant (CS & CSS) personnel. The POC for further information is LTC

Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

**Campaign Analysis, Integrated Theater Missile
Defense Phase I (CATMID I)**

Conducts and analyzes theater campaign simulations in support of integrated Theater Missile Defense (ITMD) Phase II study. Focus of analysis evaluates contributions of the ITMD operations in support of the maneuver forces and protection of critical assets. The POC for further information is Mr. DePalma, US Army Concepts Analysis Agency, DSN 295-5252.

**Contingency Deployment - CAA Support to 3rd
US Army (CD-SUSA)**

Assists in the deployment of the 3rd US Army analytical team to Atlanta. Provides contingency Course of Action analysis as required by the Commander, 3rd US Army and Chief of Plans Division. Integrates results into the G3 Plans Wargaming process. The POC for further information is COL Hillman, US Army Concepts Analysis Agency, DSN 295-0578.

**Contingency Plan 1015 Requirements Analysis
(CONPLAN 1015RA)**

Provides campaign analysis support to Third U.S. Army examination of CENTCOM's strategic concept for OPLAN 1015. This effort in conjunction with CENTCOM sponsored forces (risk assessment) conference. The POC for further information is COL Hillman, US Army Concepts Analysis Agency, DSN 295-0578.

Data Analysis of Demography (DAD)

Assesses demographic forecasts and assumptions of the United States population out to the planning horizon of 2020. This assessment allows the Army to better understand the personnel resources available for accession in the long-term. The POC for further information is Ms. Mantzouranis, US Army Concepts Analysis Agency, DSN 295-6929.

Deep Attack/Weapons Mix Study Support (DAWMS)

Supports the Army Staff in assuring that the mathematical models employed in the Deep Attack Weapons Mix Study credibly represent joint force objectives and the Army's contribution toward the achievement of those objectives. The POC for further information is LTC Maxwell, US Army Concepts Analysis Agency, DSN 295-1082.

DAWMS (Air Defense) (DAWMS (AD))

Estimates the vulnerability of US helicopters against various threat systems and evaluates the implications of these estimates at varying degrees of model fidelity. The POC for further information is Mr. Ogorzalek, US Army Concepts Analysis Agency, DSN 295-1697.

DAWMS Support (DAWMS SPT)

Performs sensitivity analyses, excursions and ad hoc analysis to assure the Deep Attack Weapons Mix Study (DAWMS) sponsored by J-8/OSD accurately portrays Army doctrine, system capabilities and fairly represents the Army's interests. The POC for further information is LTC Maxwell, US Army Concepts Analysis Agency, DSN 295-1082.

Dual Force Packages for Korea (DFP-K)

Determines the Combat Support and Combat Service Support units doctrinally required to sustain the two force packages for 60-90 days. The POC for further information is Mr. Mills, US Army Concepts Analysis Agency, DSN 295-5534.

Impact of DNBI Casualty Rates on Theater Force Structure (DNBI-EFFECTS)

Assesses the impact of the sets of disease and non-battle injury (DNBI) casualty rates being proposed by the Army Medical Department (AMEDD) Center & School for use in TAA-05. The POC for further information is Mr. Miller, US Army Concepts Analysis Agency, DSN 295-0308.

DSM IV - Korea as a Second MRC - Warning Excursions (DSMIV-WARN)

These excursions examine the effect of additional warning time on Phase II of the Korean campaign.

The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

Early Counteroffensive Investigations - SWA (EIC-SWA)

Investigates way to shorten the amount of time necessary to transition from the build-up phase to the counterattack phase when modeling the Defense Planning Guidance Illustrative Planning Scenarios in the TAA process without altering the TAA process. The POC for further information is Mr. Dwarkin, US Army Concepts Analysis Agency, DSN 295-1663.

Evaluation of Land Value Study II (ELVS II)

Expands the application of the ELVS methodology to all units that train at Fort Hood, develops a capacity to formulate multiple year investment strategies, and addresses synergistic and anergistic effects among training land management and maintenance practices. The POC for further information is Mr. Siegel, US Army Concepts Analysis Agency, DSN 295-5289.

EUCOM Landmine Analysis (EUCOM-LA)

Assesses the impact of the Leahy moratorium on anti-personnel landmine (APL) use on EUCOM operations in OPLAN. The POC for further information is LTC Crain, US Army Concepts Analysis Agency, DSN 295-1581.

Forecasting Available Dollars (FAD)

Assesses funding levels that may be available to the Army out to the FY2020 planning horizon. The POC for further information is Mr. Gordon, US Army Concepts Analysis Agency, DSN 295-0450.

Fleet Age Recapitalization - Armored Systems (FAR ARMS)

Evaluates the long-range impact the current POM will have on the Army's fleet of Armored vehicles. The POC for further information is Mr. Kourkoutis, US Army Concepts Analysis Agency, DSN 295-1684.

Fleet Age Recapitalization - Communications System (FAR COMMS)

Evaluates the long-range impact the current POM will have on the Army's inventory of communications systems and determine the cost of replacing systems at the end of their economic useful lives. The POC for further information is Mr. Kourkoutis, US Army Concepts Analysis Agency, DSN 295-1684.

Fleet Age Recapitalization - Fire Support (FAR FIRES)

Evaluates the long-range impact the current POM will have on the Army's fleet of self-propelled Artillery. The POC for further information is Mr. Kourkoutis, US Army Concepts Analysis Agency, DSN 295-1684.

Fleet Age Recapitalization - Helicopters (FAR HELOS)

Evaluates what long-range impact the current POM will have on the Army's fleet of helicopters. The POC for further information is Mr. Kourkoutis, US Army Concepts Analysis Agency, DSN 295-1684.

Fleet Age Recapitalization - Tactical Wheeled Vehicles (FAR WHEELS)

Evaluates what long-range impact the current POM will have on the Army's fleet of tactical wheeled vehicles and determine the cost of replacing systems at the end of their economic useful lives. The POC for further information is Mr. Kourkoutis, US Army Concepts Analysis Agency, DSN 295-1684.

Four Country Analysis of Africa (FOCAA)

Demonstrates the capabilities of PERICLES methodology, and how it can be useful as a decision support tool for USEUCOM. The POC for further information is Mr. Gory, US Army Concepts Analysis Agency, DSN 295-1684.

Functional Category Battle Casualty Rates (FUN-CATS)

Develops a methodology to translate echelon-level battle casualty rates into echelon-level functional category rates and generate sets of echelon-level

functional category battle casualty rates for the SRA-2003 MRC-East and MRC-West base case campaign. The POC for further information is Mr. Miller, US Army Concepts Analysis Agency, DSN 295-5292.

Groundfire 95 Low Level Radiation Issues Workshop (GF95)

Examines Operation Exposure Guidance (OEG) standards and requirements for Army personnel operating in a low level radiation contaminated environment; outlines low level radiation detection and assessment capabilities; determines new equipment requirements and fielding options; determines Title X requirements for options in this environment. The POC for further information is Mr. Elliott, US Army Concepts Analysis Agency, DSN 295-1680.

Non-divisional Combat Forces Casualty Rates (GHQ-95 PPRDE)

Enhances the Echelon Above Division Casualty Estimation Methodology to estimate battle casualties to non-divisional personnel assigned and operating at the division echelon. Identifies the FASTALS designated non-divisional combat support and combat service support force elements operating in the division echelon and battle casualty rate estimates. The POC for further information is Mr. Miller, US Army Concepts Analysis Agency, DSN 295-5292.

Ground Maneuver Analysis Support - Data Analysis (GMAS-DA)

Documents the gathering, analysis and presentation of data in support of GMAS study efforts. The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-6956.

GCC OPLAN Update (GOU)

Examines the campaign impact of recent changes and potential scenario excursions to the base case modeling effort conducted in support of the Decision Support Modeling III (DSM III) effort conducted for the Combined Forces Command (CFC)/United States Forces Korea (USFK) staff. The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

Groundshine 96 (GS96)

Examines the US Army Interoperability requirements, operational guidance, and standards for participation in NATO missions involving extensive low level radiation contamination. The POC for further information is Mr. Elliott, US Army Concepts Analysis Agency, DSN 295-1680.

GDAS-TPFDD 96 (GT96)

Updates the results from the RSOI Operations study using the Maintenance TPFDD dated 24 May 95 for the MRC-W scenario, and using the Global Deployment Analysis System (GDAS). The POC for further information is Ms. Carlucci, US Army Concepts Analysis Agency, DSN 295-5270.

Heavy Division Reduction Impact on Strategic Mobility (HEDRISM)

Determines reduction in lift required to move a heavy division if the size of the division was reduced unilaterally across all units of measurement at levels of 10%, 20%, 30%, and 40%. Determines and measures the impact on strategic deployment if the unneeded lift was used as surge sealift to move the other near-simultaneous MRC requirements. The POC for further information is Ms. Loudin, US Army Concepts Analysis Agency, DSN 295-1657.

Helicopter, Attack/Reconnaissance - Campaign Modeling (HELIARC)

Provides the DODIG with modeling data and campaign outcomes pertaining to US helicopters as played in SRA03 Near Simultaneous Campaign for SWA and NEA. The POC for further information is Mr. Good, US Army Concepts Analysis Agency, DSN 295-5276.

Impact of Light Brigades on Division Design (ILIB)

Assesses the total Army and theater impacts of changing from the Army of Excellence (AOE) to one of the main candidates for the Force XXI design. The analysis examines the impact of changing one heavy brigade (BDE) in each of the 6 heavy divisions into a light BDE. The POC for further information is LTC Arnwine, US Army Concepts Analysis Agency, DSN 295-1698.

Internal Look (ILOOK)

Supports courses-of-action decisions during the CENTCOM CPX, INTERNAL LOOK. The POC for further information is LTC Crain, US Army Concepts Analysis Agency, DSN 295-1581.

Internal Look-1015 (ILS2)

Performs campaign analysis in support of OPLAN for Dual MRC/NEA first. The POC for further information is COL Hillman, US Army Concepts Analysis Agency, DSN 295-0578.

DPG IPS Review (IPS)

Reviews and comments on draft Defense Planning Guidance (DPG) Illustrative Planning Scenarios (IPS). The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

Joint Chemical & Biological Defense Program Prioritization (JCBD PRI)

Develops & demonstrates decision support methodology that will assist the Army in the execution of the Joint Biological & Chemical Defense Program. The POC for further information is LTC Maxwell, US Army Concepts Analysis Agency, DSN 295-1082.

Joint Theater Air Defense BMC4I Analysis Working Group (JTAD BMC4I)

Provides technical advice and guidance support to the Air Force Studies and Analyses Agency, as a member of the Joint Theater Air Defense (TAD) Battle Management, Command, Control, Communications, Computers, and Intelligence (BMC4I) Analysis Working Group. The POC for further information is Ms. Roberts, US Army Concepts Analysis Agency, DSN 295-1591.

Korea Intermediate Logistics Base Support Assessment (KILBASA)

Determines the support forces required to perform the following missions at support bases in Japan and Okinawa: Theater medical support, provide fuel to Air Force for refueling of strategic lift aircraft, overflow theater maintenance support and staging

of evacuees from the mainland. The POC for further information is Mr. Stoll, US Army Concepts Analysis Agency, DSN 295-2088.

**Korea, Bosnia, Haiti Analysis, Third Version
(KOBOSH III)**

Determines above and below the line shortages in an OOTW/single MRC scenario and an OOTW/Dual MRC scenario. Analyzes the impact an OOTW has on the deployment of resources to a single MRC and Dual MRCs. The POC for further information is Mr. Albert, US Army Concepts Analysis Agency, DSN 295-1526.

Kuwait Training Cost Estimate (KUTRACE)

Estimates the incremental costs for a 2-month training exercise in Kuwait on prepositioned equipment. The POC for further information is Mr. Gordon, US Army Concepts Analysis Agency, DSN 295-0450.

LEGAL MIX Support (LEGAL MIX)

Develops a modified VAA NEA scenario to include a Light Division attack with light artillery support to secure river crossing sites and program into EAGLE model. Provides a copy of the current EAGLE model, scenario files, maneuver trace, and history files from record run to TRAC in support of USAFAS LEGAL MIX study. The POC for further information is LTC Terry, US Army Concepts Analysis Agency, DSN 295-1665.

**Lower Tier Stockage Alternatives-Missile
Inventory Solutions (LOTS-MSLS)**

Investigates the lower tier theater missile defense interceptor inventory requirement for PATRIOT and Navy Area TBMD systems. The POC for further information is Mr. Engelmann, US Army Concepts Analysis Agency, DSN 295-1501.

**Minimum Distribution System Quantity
Evaluation Update (MDSQ-EVALU)**

Provides DA DCSOPS with updated MDSQ planning factors for major combat systems and munitions. The planning factors used are extracted from the Wartime Requirements Army Reserve Update (WARRU) & its adverse case (WARC). The POC for

further information is Mr. Gould, US Army Concepts Analysis Agency, DSN 295-6955.

**Modernization of Network in ROK
(MODERN ROK)**

Develops a decision analysis tool that will assist in the evaluation of a nuclear, biological, and chemical (NBC) model. The model chosen will be integrated into United States Forces Korea (USFK) maneuver control system (MCS) to assist in processing NBC warning and reporting. The POC for further information is LTC Maxwell, US Army Concepts Analysis Agency, DSN 295-1082.

**Managing Research in Environmental Decision
Making (MRED)**

Develops and demonstrates a methodology to measure and analyze the return on environmental projects in the Army. The demonstration will be focused on the generation of prioritized RDTE investment strategies for the FY97 budget. The POC for further information is Mr. Connelly, US Army Concepts Analysis Agency, DSN 295-1682.

Objective Force Planning (OFP)

Develops a process/methodology to determine the Army's Objective Planning Force. Adapt the relevant features of the Ground Maneuver Army Support (GMAS) methodology in the process design. The POC for further information is LTC Arnwine, US Army Concepts Analysis Agency, DSN 295-1698.

**OPLAN 1002 Consumption and Losses
(OP1002-CL)**

Provides ammunition consumption and losses of major ground systems in support of 1002 OPLAN analysis. The POC for further information is LTC Crain, US Army Concepts Analysis Agency, DSN 2951581.

Prioritization of Antitank Munitions (PAM)

Examines the work accomplished in SRA-03 to determine the feasibility of developing a prioritization of the US Army's Armor/Anti-Armor munitions in the 2005 time frame. This QRA is in support of JROC. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Pacific Challenge 96 Political-Military Game (PC-96)

Assesses how proposed Pacific endstate options impact on the US Army's ability to execute the National Military Strategy. The POC for further information is Ms. Sharkey, US Army Concepts Analysis Agency, DSN 295-4715.

Peace Enforcement - Force Protection (PE-FP)

Identifies the force capable of achieving force protection in the operation other than war - peace enforcement (OOTW-PE) scenario. The POC for further information is LTC Stevens, US Army Concepts Analysis Agency, DSN 295-1526.

Phantom Warrior (PHANTOM WARRIOR)

Determines the impact on current ARCENT and CENTCOM OPLANs of the modernization of Kuwaiti units. The current operational concepts for defense of Kuwait will be modeled to determine if there is a window of vulnerability because of the requirement to stand-down a Kuwaiti brigade to receive modernized equipment. The POC for further information is MAJ Harless, US Army Concepts Analysis Agency, DSN 295-1696.

Partial Modernization Strategy (PMS)

Determines the effects of partially modernizing the force on the conduct of theater campaigns in accordance with the Defense Planning Guidance. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Partial Modernization Strategy (EAGLE) (PMS-EAGLE)

Determines the effects on a partially modernized force on the conduct of the MRCs in the current Defense Planning Guidance (DPG) scenarios. The initial PMS was able to examine only the 2005 timeframe. This QRA examines both 2005 and 2015. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Pacific Vision 95 Issues Workshop (PV-95)

Develops endstate options for the Pacific Theater out to 2015. Determines regional trends in the Pacific which will impact on the future Army strategy, force structure, and disposition; identifies and assesses the impact of alternative futures on US Army's long-term strategy; and outlines strategic principles and imperatives for the year 2015. The POC for further information is Ms. Sharkey, US Army Concepts Analysis Agency, DSN 295-4715.

Quality of Life Measurement and Analysis (QUAILMAN)

Determines if there has been an improvement in the Army's quality of life programs given that the costs of these programs have increased recently. The objective of the QRA is to evaluate the costs and benefits of selected Army Quality of Life programs in support of the FY98 POM build. The POC for further information is Mr. Womack, US Army Concepts Analysis Agency, DSN 295-6930.

Research, Development & Acquisition Alternative Analyzer (RDA3)

The RDA3 model was developed by NPS, modified by TRADOC, and is being examined as a possible vehicle to achieve the desired goal of expanding the number of systems addressed by the VAA Studies. This effort modifies the RDA3 model and merge the RDA3 & VAA products into a consolidated recommendation for ODCSOPS. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Support for CSA Testimony (SCAT)

The CSA asserted that the Army did not know it would buy, even if RDA TOA was significantly plussed up (i.e., 20B/yr). This QRA provides information to DAMO-FDR on procurement alternatives to prepare the CSA for testimony on 28 Mar 1996. The POC for further information is LTC Pudwill, US Army Concepts Analysis Agency, DSN 295-1609.

Sourcing NATO Contingency Operations (SNCO)

Determines the below the line force structure needed to support a NATO contingency operation. The POC for further information is MAJ Aviles, US Army Concepts Analysis Agency, DSN 295-5291.

Southwest Asia OPLAN Analysis of Patriot - Deployment (SOAP-D)

Provides analytical support in the development of the latest OPLAN. The POC for further information is Mr. Engelmann, US Army Concepts Analysis Agency, DSN 295-1501.

Sortie Requirements (SORREQ)

Determines the mix of C-5/C-141 and C-17/C-141 strategic airlift sorties required to deploy a Heavy Aviation Battalion and a Light Aviation Battalion. The POC for further information is Dr. Abbe, US Army Concepts Analysis Agency, DSN 295-0027.

Stability Analysis of Africa (STAAF)

Identifies current risk ratings for African countries in USAREUR AOR; identifies those African countries that registered risk ratings of Serious or Critical; validates the PERICLES methodology; provides detailed analysis of four African nations selected by DCSINT. The POC for further information is Mr. Gory, US Army Concepts Analysis Agency, DSN 295-1684.

Strategic Deployment to Korea and Two Other Pacific Regions (STRAT-3X)

Evaluates strategic deployment of forces to Korea and two other regions in the Pacific. The POC for further information is MAJ Herr, US Army Concepts Analysis Agency, DSN 295-1677.

Southwest Asia Preposition Strategy (SW-PREPO)

Determines options for SWA preposition stockage strategies to support theater specific OPLANs. The POC for further information is LTC Crain, US Army Concepts Analysis Agency, DSN 295-1581.

SWA Additional Patriot Preposition Analysis (SWAPP)

Assists ARCENT in determining where to locate additional prepositioned Patriot assets. The POC for further information is Mr. Engelmann, US Army Concepts Analysis Agency, DSN 295-1501.

Theater Logistics Concept Evaluation (TLC-EVAL)

Determines impact of forward positioning selected materiel, upon strategic and intra-theater movement of follow-on forces, and campaign operations. The POC for further information is MAJ Herr, US Army Concepts Analysis Agency, DSN 295-1677.

Theater Level Simulation of Ammunition Distribution System (TLS-ADS)

Develops a theater-level simulation of the ammunition distribution system for Southwest Asia and Northeast Asia based on the SRA-03 Campaign. This simulation will be used to determine if the ammunition requirements developed in the CALAPER Process includes sufficient ammunition to account for distribution (pipeline) requirements. The POC for further information is LTC Orloff, US Army Concepts Analysis Agency, DSN 295-6993.

Theater Missile Defense COEA (TMD COEA 1 & 2)

Both efforts provide support to MG Garner, CG, USA Space and Strategic Defense Command (SSDC), in his role as Army operational advocate & focal point for Theater Missile Defense (TMD) relating to the conduct by OSD & the Ballistic Missile Defense Office of the Capstone TMD cost & Economic Analysis (COEA). The POCs for further information are Mr. Rose or Ms. Roberts, US Army Concepts Analysis Agency, DSN 295-1599/1591.

TAA-03 OSD PA&E Review (TOPR)

Provides OSD PA&E with all TAA/SRA-03 inputs, outputs, assumptions, and factors. Include explanations of how CAA conducted TAA/SRA-03 and how the process works. The POC for further information is LTC Peterson, US Army Concepts Analysis Agency, DSN 295-1688.

VAA 98-03 Corps Operations Modeling Support (VAA-COMSUP)

Corps-level combat modeling in support of the Value Added Analysis study. Consists of sponsor interaction, data development, scenario development and implementation, execution of record runs, analysis of results, delivery of results to study director, assistance in preparing and delivering sponsor briefings and information briefings. The POC for further information is LTC Alexander, US Army Concepts Analysis Agency, DSN 295-5259.

VAA Unit Cost (VAA-UC)

Demonstrates the VAA model's capability to provide AMSAA with the unit cost, using various production rates, of the weapon systems analyzed in VAA IV. The POC for further information is Ms. Coblenz, US Army Concepts Analysis Agency, DSN 295-6874.

Wartime Based Lieutenant Officer Replacement Requirements (WARBLORR)

Analyzes the Army's replacement requirement for lieutenants during wartime for both near-term and mid-term timeframes. Identify replacement requirements at division, corps, and COMMZ echelon levels from battle, disease, and non-battle injury sources. The POC for further information is Mr. Miller, US Army Concepts Analysis Agency, DSN 295-5292.

Warfight Sustainability Report - Artillery (WSR-ARTY)

Evaluates the WSR process for artillery and recommends improvements. This QRA was conducted in conjunction with operational analysis of the new OPLAN. The POC for further information is Mr. Poulos, US Army Concepts Analysis Agency, DSN 295-1625.

Warfight Sustainability Report - Helicopters (WSR-HELO)

Evaluates the Warfighting Sustainability Report (WSR) process for artillery (Class V and VII) and recommends improvements. This QRA done in conjunction with operational analysis of the new OPLAN. The POC for further information is Mr. Poulos, US Army Concepts Analysis Agency, DSN 295-1625.

Warfight Sustainability Report (Tank) (WSR-TANK)

Evaluates the Warfight Sustainability Report (WSR) for Tank Class V and VII and identifies potential problems and improvements. This QRA was done in conjunction with operational analysis of the new OPLAN. The POC for further information is Mr. Poulos, US Army Concepts Analysis Agency, DSN 295-1625.

Follow-on Analysis for JPSD (X-MLRS-2)

Continuance of analysis of US MLRS vs. North Korean 240 mm MRLs with emphasis on improved FIREFINDER, 2nd Generation FLIRs, and advanced technology artillery communications systems. The POC for further information is Mr. Bruce, US Army Concepts Analysis Agency, DSN 295-1627.

TECHNOLOGY RESEARCH AND ANALYSIS SUPPORT

TECHNOLOGY RESEARCH

General. CAA's Advanced Research Projects Office (ARPO) has a threefold mission: to identify and evaluate advanced technologies and methodologies for potential applicability to the CAA mission; to provide consultation on advanced technology subjects and methods; and to develop and execute an applied research program. ARPO's mission is to find and import useful technology. During FY96, ARPO pursued a variety of exploratory and developmental efforts to apply new and emerging technology to CAA's study, analysis, and QRA processes. The major projects and activities are summarized below.

A Differential Geometric Approach to Problems in Combat Analysis (DIFFGEO). Prof. Peter F. Stiller of Texas A&M University published the second and final volume on the research completed in FY95 on the applicability of modern geometric and algebraic methods and stochastic differential equations to several combat modeling problem areas. The volume compares three methods for computing weapon values and importances, a problem central to the allocation of targets among firers and, hence, to the representation of attrition for heterogeneous engaged units.

Preservation of Statistical Properties of Data Among and Across Military Models and Simulations. Dr. Y.C. Ho (Harvard) and Dr. Wubei Gong (University of Massachusetts-Amherst) continued research on ways to transfer target allocation and attrition data from division level combat simulation samples to theater level modeling. By the end of FY96, Dr. Gong successfully demonstrated a method for "path bundling," in effect, a state trajectory clustering prototype. The work supports stochastic representation of engagement duration and attrition at theater level and simultaneously achieves high computational efficiency.

Combat Simulation Trajectory Management. Dr. Gilmer (Wilkes University) completed a first year research project to investigate the applicability of "multitrajectory simulation techniques" to force-on-force combat simulations. Multitrajectory

simulation follows two or more outcomes of a random event, instead of only a single outcome determined by chance as is the usual practice for a single replication of a stochastic simulation. Gilmer's method follows and preserves many trajectories or paths and their associated probabilities through simulation state space. For small simulations, the approach may track all paths. However, for real problems the primary challenge is controlling and constraining the potential combinatoric explosion by a managed sampling approach. In principle, best management should provide a maximally informative trajectory set—or, if not maximal, a set that provides the information necessary and sufficient to support conclusions or to feed another step of simulation in a modeling hierarchy. Collaboration with Drs. Gong and Ho is planned for FY97.

High Performance Computing (HPC). CAA, a remote site for the Army High Performance Computing Research Center (AHPCRC), coordinated work with the AHPCRC to test and improve the portability and performance of CAA's simulation and optimization models. Dr. Kosmo Tatalias continued his assignment as CAA's on-site AHPCRC representative. His involvement in a variety of modeling and computing initiatives included detailed analysis of the time decomposition properties of target allocation and attrition algorithms.

Artificial Intelligence (AI) and Lisp-Related Activities. The application and promotion of AI technology is a long-standing ARPO goal.

AI Specialty Program for Civilians. At the request of the Directors of the Army AI Center (USAAIC) and of Army Information, Ms. Judith Bundy continued work to establish an AI Specialty Program for Army civilians. The program will recognize specialized individual skills and help the Army meet its growing AI needs. The effort supports National Performance Review initiatives, improves workforce skills targeted to the Army Information Warfare Mission, and increases opportunities for networking and technology transfer throughout the Army AI community. The program is expected to be in place by the end of 1996.

Sophisticated Software Development Tools. With USAAIC support, ARPO implemented several development tools now available across CAA's UNIX workstations, Macintoshes, and Personal Computers and hosted an Army-wide expert systems course.

New COSAGE Toolkit. A cooperative knowledge engineering, software development and relational database effort among several CAA divisions is integrating a suite of existing and emerging software tools. As outgrowths of earlier work, ARPO and the USAAIC are designing and developing a GUI-based system to define, build, and check model ready input to COSAGE. The system is to be operational by the end of 1996. That system is intended as a template for extension to other CAA models and processes.

Visualization. With support from the Army's SIMTECH program, ARPO continued to expand CAA's visualization capabilities with emphasis on helping analysts "see and understand results." Throughout FY96, ARPO worked with selected CAA action teams to design, develop, and implement useful static and dynamic display routines. ARPO made extensive use of Wolfram Research's Mathematica, embedded within CAA's distributed analyst workbench (i.e., across the CAA LAN). Visualization runs can be done on Macintosh, Windows, and Unix computers, including laptops. Users themselves do much of the work and export displays for use in customer presentations. Development and application are ongoing.

Consultation.

Network and Lattice Representation of Knowledge. At the request of the DUSA(OR), ARPO began a dialog with analysts at Los Alamos Laboratory (LANL), reviewed some modeling methods proposed by LANL, noted some limitations, and made recommendations for generalization of the LANL approach.

Theater Missile Defense. ARPO developed a hierarchical dynamic programming algorithm and associated display options for application in a CAA theater missile allocation analysis (LOTS-MSLS).

Logistic Planning Factors. ARPO began a review of the logic and content of the process by which CAA and CASCOM generate logistic planning factors (lbs/man/day) for use in CAA's SRA05 and other analyses.

Statistical Analysis Support. ARPO continued to provide agency-wide support in experimental design and statistical analysis. Dr. Y. Y. Chen continued a series of seminars on fuzzy logic and neural network techniques.

The POC for more information about topics addressed in this section is Mr. Gerald E. Cooper; Chief, Advanced Research Projects Office; US Army Concepts Analysis Agency; DSN 295-0529, email cooper@caa.army.mil.

METHODOLOGY RESEARCH

General. CAA uses a wide variety of simulations, models, and special purpose ADP systems to accomplish its study program. These tools, often referred to collectively as models, range from simple spread sheets and data processing systems to complex simulations of theater combat. The following paragraphs describe major accomplishments in our continuing program of methodology development and enhancement.

Development Efforts:

Advanced Regional Exploratory System (ARES). This regional theater campaign simulation model development effort continues work previously done under the Concurrent Theater Level Simulation (CTLIS) development program. Specifically, ARES has evolved as a merger of the CAA developed CTLIS and the Theater Exploitation Study System (TESS) model developed for the U.S. Army INSCOM, Studies and Analysis Activity (SAA). The ARES design provides for an event sequenced, object oriented structure and the capability to represent regional conflicts, in a joint, combined and alliance context, ranging from full scale theater operations to lesser regional contingencies. ARES brings together the intelligence, communications and information warfare simulation features of TESS with the flexible regional campaign representation capability of CTLIS. This flexibility is realized through a user-specified maneuver network which allows adaptable representation of maneuver warfare and a robust command and control process, with both user-scripted and rule-based decisions, which permits user control of the phased execution of an operations plan. CAA has worked with the Air Force SAA the Navy SPAWAR and the OSD JWARS Office in coordinating model development activities.

The design work for ARES began in late FY95, with the objective of producing a first prototype version by mid FY97. The development is proceeding in a series of four separate "Builds", the second of which was delivered to CAA at the end of FY96.

Global Deployment Analysis System (GDAS). The U.S. Army Concepts Analysis Agency (CAA) has developed GDAS, a high resolution transportation modeling system for the comprehensive simulation of end-to-end force deployment: troops and equipment from CONUS/ OCONUS origins to theater tactical assembly areas (TAAs). GDAS, which combines a multi-modal entity model with a relational database system, provides seamless simulation of mobility of forces from origin to within theater destination (i.e., initial tactical assembly areas). GDAS is unique in its capability to distribute distinct types of cargo onto vehicles of multiple modes (e.g., road, rail, air, sea, pipeline, inland waterway) across an expandable global network with detailed facility structure. GDAS combines scheduling techniques for effective selection of mode, route, and assignment of vehicles with an objective of achieving timely deployment in combination with efficient use of resources based on user priorities. The GDAS data structure is expandable by network, vehicle type, and facility type. Tools for preventing data inconsistencies have been built into the relational database. Major study applications include the Reception, Staging, Onward Movement, Integration plus Strategic (RSOI-S) Study and Support Force Requirements Analysis-2005 (SRA-05). Formal GDAS training has been conducted at both CAA and USTRANSCOM. Installation discs and user's manuals have been released to interested users since May 95. GDAS capabilities continue to be expanded during FY96.

Mobilization Capabilities Evaluation Model (MOBCEM). MOBCEM will simulate the mobilization process for units and individuals from Home Station to Port of Embarkation. The MOBCEM prototype model completed in FY95 was successfully evaluated and is now the basis for full-scale model development which started in January 1996. The development is currently in the latter stages of Phase I. While the prototype concentrated on activities at the Mobilization Station, Phase I development will incorporate Home Station processing, transportation between stations, depots, requisitioning, design of the interface of MOBCEM with deployment models, and additional output reports and graphics. Phases I and II of the full-

scale development will constitute the Army version of MOBCEM and are expected to be completed in the fall of 1997. The mobilization processes of the other services will be added in Phase III. MOBCEM will be the mobilization component of the Joint Warfighting System (JWARS) under development by OSD.

Methodology Improvement Efforts:

Concepts Evaluation Model (CEM). The CEM is a computer simulation model of ground and air warfare operations that is used by CAA to conduct analysis of the capabilities and requirements of forces engaged in warfare at theater level. During FY96, the CEM was modified to permit introduction of personnel casualties and equipment contamination due to chemical weapons employment. The CEM was also modified to enhance its deep fire capability to more adequately reflect variations in the commander's strategy. The model was successfully transported to the PC environment, including laptop PC's, using a Unix-like operating system. As a result, CEM can and has been used for in-the-field campaign planning analysis. Other modifications include the production of additional reports to aid in the analysis of theater campaign simulations.

Stochastic Concepts Evaluation Model (STOCEM). A stochastic version of the CEM, called STOCEM, provides users the option of treating certain CEM processes—including commanders' decisions, the assessment of combat attrition, the disposition of casualties and of combat-damaged vehicles, and the movement of engaged forces—as stochastic (based on statistical distributions) rather than deterministic (based on expected values). The latest STOCEM research examines how the model logic can be modified to respond to the recommendations of the Ardennes Campaign Study (ARCAS) of a historical campaign and investigates to what extent such modifications improve the fidelity and robustness of the model. Enhancements implemented include modifications to: (1) permit a user to limit by input the maximum duration of a sustained attack by a maneuver unit; (2) force advancing maneuver units to halt at input-specified objective lines; and (3) represent an overrun by an attacking unit that has a large force ratio advantage.

Combat Sample Generator (COSAGE). This division-level model continues to be used to generate weapon system level attrition and expenditure data for use by theater models. New developments include generation of weapons system data representative of more than one level of static posture and of deep attack effects. A major initiative is the COSAGE Data Management System (CDMS2) project, an ongoing effort to organize COSAGE input data within a database management system which maintains previous input data sets and has a graphical user interface for simple and rapid data manipulation. As part of this project, sweeping changes were made to the formats of the model input files and automated tools were developed to translate existing files from the old format to the new.

Eagle Combat Model (Eagle). During FY96 the experience gained using the Eagle model in the Value Added Analysis IV Study was institutionalized at CAA through training, documentation, sensitivity analysis testing of the model and the construction of additional scenarios. Major improvement work included sensitivity analysis of the direct-fire target acquisition and attrition algorithms, enhancement of the direct-fire algorithm to allow multiple munitions to be fired from a single platform, and modification of the preprocessor menu structure. Major development work included the design and partial implementation of a new logistics module for the model and the development of a SWA scenario closely linked to ARCENT and CENTCOM OPLANs.

Force Analysis Simulation of Theater Administrative and Logistics Support (FASTALS). Significant logic changes to the model continued in FY96 under a model modernization program begun in FY95. A major logic change was to increase the number of workloads representing military logistical activities, thereby raising the level of resolution in determining the type and number of units required for the support force structure. An improved POL consumption methodology was developed to better reflect the percent of time in moving and stationary states for units. New output reports and extensive revisions to existing reports were implemented and considerable effort was devoted to the verification and validation of the model. New algorithms, data requirements and reports were coordinated with other outside user agencies.

Computer Assisted Match Program (CAMP). Several enhancements were made to this process for generating movement requirements. They include: aggregating the JOPES cargo category codes to bring them in line with the cargo categories used in Joint Staff deployment analysis; adding intra-theater output files for pre-positioned equipment sets for the GDAS model; bringing the edit program in line with the data that is currently available on the SAMAS force tape; creating a program to use the Joint Staff geographic location code database; and completing the program which matches SAMAS units with FASTALS generated requirements as needed for such studies as TAA.

The POC for more information about topics addressed in this section is Mr. Wallace Chandler, Operations Support Division; US Army Concepts Analysis Agency; DSN 295-1692, email: chandler@caa.army.mil.

AUTOMATION SUPPORT

The Agency strives to achieve a hardware and software environment which places at the disposal of each analyst, an automation toolset sufficient to meet that analyst's needs. This toolset is designed to be flexible so that it can be readily modified/enhanced to meet changing needs in a reasonable manner. Through networking of individual computers and cross-platform software compatibility tools this seamless analyst's environment is rapidly becoming reality. During a three-year aggressive ADP Modernization effort workstations and network assets have been replaced and/or upgraded to gain this working environment. In FY96 the following significant automation items have been added:

- additional color scanners (3)
- portable/notebook Pentium computers (21)
- black & white network laser printers (5)
- PowerMac 8500/9500 (5)
- pentium-based PCs (124)
- Hewlett Packard C-series workstations (13)
- IBM RS-6000/390 Workstations (4)
- Auspex superserver increase of ~200GB storage (files management)
- Installed a major network upgrade with fiber-optic and high-speed hubs

The network enhancement includes a ten-fold increase in bandwidth capacity and 100mbps to the workstation for most of the UNIX workstations. After 8 years of successfully working under Ethernet limits, the need for high speed and wide bandwidth is now occurring

The POC for more information about Information Resources is Mr. David A. Hurd; Chief, Technology Support Division; US Army Concepts Analysis Agency; DSN 295-0514, email: hurd@caa.army.mil.

MISSION AND MANAGEMENT SUPPORT

PERSONNEL MANAGEMENT

Organization and TDA.

♦ **Structure.** CAA continued operating as a flat organization with thirteen division chiefs reporting to the Director (reference Chapter 1, Figure 1-2). This is a reduction of one division from the previous year.

♦ **TDA.** CAA's current TDA was received in August 1996 with an effective date of 1 November 1996. The FY97 TDA authorizes the same number of civilian and military positions as the FY96 one with the exception of the high grade cap which shows a reduction of two.

♦ **High Grade Cap.** The number of GM/GS-14s and 15s continued to be managed at the DA level, and the Agency's number of authorizations was reduced this year by the retirement of one division chief, the election of two senior analysts to take advantage of the Voluntary Early Retirement Program/Voluntary Separation Incentive Pay Program and, unfortunately, by the death of two analysts. These reductions bring the authorized number of high grades equal to the number of individuals assigned to those grades for FY97.

♦ **Relocation.** The 1995 Base Realignment and Closure (BRAC) recommendations, including this Agency's relocation to Fort Belvoir, were enacted into law by Congress in early FY96. The Baltimore District of the U.S. Army Corps of Engineers completed the design of a new building for 180 people to be constructed at Goethals and Franklin Roads at Fort Belvoir, Virginia. The current schedule calls for the construction contract to be let in the summer of 1997 and for the building to be ready for occupancy in August of 1998.

♦ **Personnel Strength.** FY96 personnel end strength by quarter were as follows:

CIVILIANS

<u>Quarter</u>	<u>Authorized</u>	<u>Assigned</u>
1	135	127
2	124	123
3	124	123
4	124	121

MILITARY

<u>Quarter</u>	<u>Authorized</u>			<u>Assigned</u>		
	<u>Off</u>	<u>Enl</u>	<u>Tot</u>	<u>Off</u>	<u>Enl</u>	<u>Tot</u>
1	57	1	58	41	1	42
2	53	1	54	36	1	37
3	53	1	54	35	1	36
4	53	1	54	48	1	49

OPERATING BUDGET RECAP

A summary of the Agency's FY96 budget execution, by major expense category is provided below. The Agency's direct funding obligation rate was 100%.

<u>Budget Category</u>	<u>Direct Funding (OA 22 Provided) (\$000)</u>	<u>External (Outside Agencies) (\$000)</u>
Payroll & Benefits	\$9,141.5	
ORSA CELL/ISC	\$273.8	
Maintenance	\$148.9	
Security	\$269.2	
Communications	\$167.0	
Licenses & Leases	\$57.2	
Supplies & Equipment	\$809.1	\$776.0
Reproduction	\$22.0	
Travel	\$166.0	\$65.0
Training	\$118.8	
Facilities	\$50.8	
Study Support		\$564.8
Total Direct Funding	\$11,224.3	\$1,405.8

The agency was able to fund essential programs from direct funding authority, as well as make significant upgrades of computer hardware.

Considerable funds were allocated, by the agency, as well as outside activities, to provide analysts the hardware and software tools necessary to conduct the day-to-day study and modeling activities of CAA.

As in previous years, a significant level of funding was received from activities outside of CAA. These funds provide an extra measure of flexibility to our program, and continue to provide a great benefit to the agency. The following is a list of major funding provided directly to CAA from outside activities:

- ♦ \$90K - From ARCENT to support automated wargaming studies.
- ♦ \$65K - From EUSA/USFK for travel to Korea in support of studies for the command.
- ♦ \$484K - From Model Improvement Study Management Agency (MISMA) for hardware and software in support of CAA studies and modeling activities.
- ♦ \$776K - From the Information Systems Command for ADP productivity improvements.

SECURITY

Orientation and Training. The CAA Security Office conducted the following activities: Agency security procedures presentations to CAA Newcomers' Orientation class and the annual NATO security access briefing. SAEDA briefing given to all CAA employees in October 1995.

Inspections.

- ♦ The annual NATO security inspection was conducted by the Office of the Central US Registry, NATO, during November 1995, and no major discrepancies were noted.
- ♦ The annual TOP SECRET inventory was conducted during Jun 1996, by the Top Secret Control Officer and an individual from the EAD/NBC Division. A complete accounting was made of all TOP SECRET documents held by the Agency.

Other.

- ♦ Submitted plans to the Chief of Engineers for security wiring of alarmed areas for new building.
- ♦ Updated all SCI billets, submitting changes and four turn-ins to DA/SSO.
- ♦ Updated the Occupant Emergency Plan and distributed changes to effected personnel.
- ♦ Conducted inventory to determine what safes will have X07 locks installed.
- ♦ Awarded contract to Federal Security Systems, Inc. to install 75 (X07) locks on security containers.

LOGISTICS

Building Lease: DA Space Management requested that the fourth floor be vacated. In order to complete this action, the EAD/NBC Division moved to the seventh floor of the Woodmont Building and the Mobilization and Deployment Division moved to the fifth floor of the Rugby Building. Upon renovation of the third and fourth floors of the Rugby Building, the US Army Physical Disability Agency was relocated from Forest Glen Army Annex. This past summer, the building entries were remodeled and enhanced with new gray marble floor tiling, glass entry doors, and live plants.

Procurement Actions: This year, several major changes were implemented in the agency procurement system. First, the simplified purchasing system raised the dollar threshold for actions from \$2.5K to \$100K, which created drastic changes to purchasing procedures of both the Federal Acquisition and Information Resources Management Regulations (FAR/FIRMR). Then with the introduction of the second IMPAC credit card system in CAA, computer supplies could be purchased without formal contracting action. This credit card, which has an increased dollar-level of \$25K/purchase, was only one of three that were approved by DSS-W with the issuance of a contracting warrant to Mari Mills. This card is primarily for ADP purchases and has greatly enhanced the timeliness of purchasing computer equipment, supplies, and services. This second card for the agency was issued in late January and by the close of the fiscal year, 83 transactions were

completed, totaling over \$222K. Major card purchases include laptop computers, projection systems, printers, copiers, facsimiles, scanners, AIOWIN software, tape and zip drives, information storage cartridges, and numerous software programs. The use of the automated contracting system, DARTS, has continued to improve the timeliness of procurement actions. The major FY96 contracting actions involving outside funding sources have been described in the section of Resource Management. The thirty-four contracting actions for FY97 (funding subject to approval or STAF), which provide continued equipment maintenance and software support were completed by DSS-W prior to 30 Sep 96! This is the first time that all contracts were completed prior to the start of the next fiscal year.

PUBLICATIONS, GRAPHICS, AND REPRODUCTION

Equipment and Services. PUBs continued to provide editorial, keyboarding, data conversion, graphic arts, audio-visual, and photographic support to the Agency. Branch personnel have been provided with enhanced hardware and software commensurate to the jobs at hand.

Publications. This year the Branch assisted in the preparation, publication, and dissemination of approximately 80 documents including study reports, documentations, and memorandum reports. Other Branch projects included preparation of special displays for the MORS Symposium, Human Dignity Council, Federal Women's Program, Association of the US Army (AUSA), Black History Month, Hispanic and Asian-American Heritage, and numerous other CAA functions. Video support was provided for numerous political-military games as well as other functions.

Reproduction. The Agency's reproduction workload continues to be accomplished by Defense Printing at two locations: unclassified work at Bethesda Navy Medical Center and classified and special format documents at Navy's Carderock facility. Turnaround time and quality of support continue to be more than acceptable. Approximately 169,167 unclassified impressions and 58,039 classified impressions were reproduced by DPPS this year. Two walkup copiers leased through DPPS were upgraded to provide more efficient support; in excess of 328,500 impressions were logged on these two copiers.

ANALYTICAL EFFORTS COMPLETED BETWEEN FY90 AND FY96

This chapter contains a title listing of all analytical efforts completed by CAA during the period FY90 through FY96. Contact CAA (ATTN: CSCA-MS) if information is needed for CAA analytical efforts completed prior to FY90.

FY96 STUDIES

FY96 QUICK REACTION ANALYSES & OTHER PROJECTS

ALCHMMI	Assessment of Log & Costs for Haz Mats Mgmt Implementation	ACSIM	A2MR	Anti-Armor Munitions Requirements	DCSOPS
APAB-PI	Active, Passive, Attack, BMC41 - Pillar Integration	USA SSDC	A2R2	Anti-Armor Requirements & Resource Analysis Study	DCSOPS
ARCAS-FO	Ardennes Campaign Simulation - Follow on	CAA	AATOP-02	Army Attack Operations-North East Asia 2002	USA SSDC
DSM IV	Decision Support Modeling IV - Support for CFC/USFK J-5	USFK	ABAPM-SWA	Assessment of Banning Anti-Personnel Mines - SWA	DCSOPS
ELVS	Evaluating Land Value Study	DCSOPS	AEA-MDSQ	An Examination of Alternative MDSQ Factors	DCSOPS
ITMD-CAP	Integrated Theater Missile Defense - Capability Assessment	DCSOPS	AMUSE	Assessment of Military Units with Spreadsheet Effort	DCSOPS
JCHEMRATES III	Joint Svc Chemical Defense Equipment Consumption Rates III	DCSLOG	APC1-4	Alternate Procurement Campaigns	PAE
KURSK III	The Battle of Kursk, Southern Front - Phase III	CAA	ARBATTS	Army Battalions	DCSOPS
LOGWAR	Impact of Army CSS on Warfighting Capability	DCSOPS	ASP 96	Army Strategic Planning Workshop - 1996	DCSOPS
NBCCAS	NBC Casualty Assessment Study	DCSPER	BOSS	Bosnia, SWA Scenario	DCSOPS
NIA-2	Nuclear Impact Assessment - 2	DCSOPS	BRSA	Brown and Root Substitution Analysis	DCSOPS
PAR-P3	Personnel Attrition Rates in Land Combat Operations, Phase 3	CAA	CANTELOUPES	Cost Analysis Tool-Estimate Lt Opns Peacekeeping Scenarios	DCSOPS
PASMPR	Prioritization of Army Strategic Mobility Project Resources	DCSLOG	CAS-TO-SPT	Casualty Estimation w/in CS & CSS Functional Areas	DASG
PERICLES	Political/Economic Risk in Countries & Lands Evaluation	DCSINT	CATMID I	Campaign Analysis, Integrated Theater Missile Defense Ph I	USA SSDC
PERSEUS	Plng Environmental Resource Strategy Evolution & Util Sty	ACSIM	CD-SUSA	Contingency Deployment - CAA Support to 3rd US Army	ARCENT
SRA-03	Support Force Requirements Analysis-2003	DCSOPS	CONPLAN 1015RA	Contingency Plan 1015 Requirements Analysis	ARCENT
SRA-05C	SRA-05 COSAGE	DCSOPS	DAD	Data Analysis of Demography	DCSOPS
SRA05-BC(NS)	SRA-05 MRC(NS) Base Case Campaign Development	DCSOPS	DAWMS	Deep Attack/Weapons Mix Study Support	PAE
VAA 98-03	Army Program Value Added Analysis 98-03	DCSOPS	DAWMS (AD)	DAWMS (Air Defense)	DCSOPS
WARREQ-03	Wartime Requirements Near Term Simultaneous Dual MRC, FY2003	DCSOPS	DAWMS SPT	DAWMS Support	DCSOPS
			DFP-K	Dual Force Packages for Korea	FORSCOM
			DNBI-EFFECTS	Impact of DNBI Casualty Rates on Theater Force Structure	DCSOPS
			DSMIV-WARN	DSM IV - Korea as a Second MRC - Warning Excursions	EUSA
			EIC-SWA	Early Counteroffensive Investigations - SWA	DACS

ELVS II	Evaluation of Land Value Study II	DCSOPS	PC-96	Pacific Challenge 96	DCSOPS
EUCOM-LA	EUCOM Landmine Analysis	USEUCOM	PE-FP	Political-Military Game	
FAD	Forecasting Available Dollars	DCSOPS		Peace Enforcement - Force Protection	DCSOPS
FAR ARMS	Fleet Age Recapitalization - Armored Systems	DCSOPS	PHANTOM WARRIOR	Phantom Warrior	ARCENT
FAR COMMS	Fleet Age Recapitalization - Communications System	DCSOPS	PMS	Partial Modernization Strategy	PAE
FAR FIRES	Fleet Age Recapitalization - Fire Support	DCSOPS	PMS-EAGLE	Partial Modernization Strategy (EAGLE)	PAE
FAR HELOS	Fleet Age Recapitalization - Helicopters	DCSOPS	PV-95	Pacific Vision 95 Issues Workshop	DCSOPS
FAR WHEELS	Fleet Age Recapitalization - Tactical Wheeled Vehicles	DCSOPS	QUAILMAN	Quality of Life Measurement and Analysis	ACSIM
FOCAA	Four Country Analysis of Africa	USEUCOM	RDA3	Research, Development & Acquisition Alternative Analyzer	DCSOPS
FUN-CATS	Functional Category Battle Casualty Rates	USAFISA	SCAT	Support for CSA Testimony	DCSOPS
GF95	Groundfire 95 Low Level Radiation Issues Workshop	DCSOPS	SNCO	Sourcing NATO Contingency Operations	DCSOPS
GHQ-95 PPRDE	Non-divisional Combat Forces Casualty Rates	DASG	SOAP-D	Southwest Asia OPLAN	ARCENT
GMAS-DA	Ground Maneuver Analysis Support - Data Analysis	DCSOPS	SORREQ	Analysis of Patriot - Deployment	
GOU	GCC OPLAN Update	EUSA	STAAF	Sortie Requirements	DCSOPS
GS96	Groundshine 96	DCSOPS	STRAT-3X	Stability Analysis of Africa	USAREUR
GT96	GDAS-TPFDD 96	EUSA	SW-PREPO	Strategic Deployment to Korea and Two Other Pacific Regions	DCSOPS
HEDRISM	Heavy Division Reduction Impact on Strategic Mobility	DCSOPS	SWAPP	Southwest Asia Preposition Strategy	ARCENT
HELIARC	Helicopter, Attack/Reconnaissance - Campaign Modeling	DAIG	TLC-EVAL	SWA Additional Patriot Preposition Analysis	ARCENT
ILIB	Impact of Light Brigades on Division Design	TRADOC	TLS-ADS	Theater Logistics Concept Evaluation	DCSOPS
ILOOK	Internal Look	ARCENT	TMD COEA	Theater Level Simulation of Ammunition Distribution System	DCSOPS
ILS2	Internal Look-1015	ARCENT	TMD COEA-2	Theater Missile Defense COEA	USA SSDC
IPS	DPG IPS Review	DCSOPS	TOPR	Theater Missile Defense COEA - Phase II	USA SSDC
JCBD PRI	Joint Chemical & Biological Defense Program Prioritization	DCSOPS	VAA-COMSUP	TAA-03 OSD PA&E Review	DCSOPS
JTAD BMC4I	Joint Theater Air Defense BMC4I Analysis Working Group	AFSAA	VAA-UC	VAA 98-03 Corps Operations Modeling Support	DCSOPS
KILBASA	Korea Intermediate Logistics Base Support Assessment	USARPAC	WARBLORR	VAA Unit Cost	AMC
KOBOSH III	Korea, Bosnia, Haiti Analysis, Third Version	DCSOPS	WSR-ARTY	Warfare Based Lieutenant Officer Replacement Requirements	DCSPER
KUTRACE	Kuwait Training Cost Estimate	DCSOPS	WSR-HELO	Warfight Sustainability Rpt - Artillery	EUSA
LEGAL MIX	LEGAL MIX Support	TRADOC	WSR-TANK	Warfight Sustainability Rpt - Helicopters	EUSA
LOTS-MSLS	Lower Tier Stockage Alternatives-Missile Inventory Solutions	USA SSDC	X-MLRS-2	Warfight Sustainability Report (Tank)	EUSA
MDSQ-EVALU	Minimum Distribution System Quantity Evaluation Update	DCSOPS		Follow-on Analysis for JPSPD	SARD
MODERN ROK	Modernization of Network in ROK	DUSA-OR	FY95 STUDIES		
MRED	Managing Research in Environmental Decision Making	ACSIM	ACRONYM	TITLE	SPONSOR
OFF	Objective Force Planning	CAA	AFPDA 97-03	Army Force Planning Data and Assumptions FY 1997-2003	DCSOPS
OP1002-CL	OPLAN 1002 Consumption and Losses	ARCENT	EAD-CAS-MET	Echelon Above Division Casualty Estimation Methodology	DCSPER
PAM	Prioritization of Antitank Munitions	DCSOPS	KAMMO	Korean Ammunition Distribution System Analysis	EUSA

MOBCEM-PD	Mobilization Capabilities Eval Model - Prototype Development	DCSOPS	DSM III	Decision Support Modeling III- EUSA	
PAR-P2	Personnel Attrition Rates in Land Cbt Opns, Phase 2	CAA	EBSFI	Support for CFC USFK J-5 Enhanced Brigade Support Force Impact	DCSOPS
ROLES/MISSIONS	Analysis Support for Army Roles and Missions	DCSOPS	EUCOM-FRE	HQ EUCOM Force Requirement Exercise	DCSOPS
RSOI-S	Reception, Staging, Onward Mvmt, & Integration - Strategic	EUSA	FACEI	Feasibility Analysis of CTLS-Eagle Interoperability	DUSA-OR
SEW	Synthesizing Energy Worth	ACSIM	FAST-OR	Force Analysis Spreadsheet	DCSOPS
WARPATH	War Reserve Positioned Across Theater(s)	DCSLOG	FOPROA II	Tool - OOTW Requirements	
			FREEFALL 95	Force Projection II	CENTCOM
				Military Game	DASG
FY95 QUICK REACTION ANALYSES & OTHER PROJECTS			GHQ-95 P2	General Headquarters Exercise Part 2	DCSOPS
95KOR-SEN	Korean Combat Samples with Modified Sensors - 1995	EUSA	GHQ-95 P3	General Headquarters Exercise Part 3	DCSOPS
AAMAA II	Anti-Armor Mission Area Analysis Phase II	DCSOPS	GHQ-95 P4	General Headquarters Exercise Part 4	DCSOPS
ABC	Artillery Brigade CS/CSS Analysis	ARMY SCI BD	GHQ-95 P5	General Headquarters Exercise Part 5	DCSOPS
ABC-APR	Analysis of BCTP vs. CAA - Ammo Process & Results	DCSOPS	GHQ-PD	GHQ 95 Personnel Data	TAPC
AFPD-DA	Army Force Planning Data & Assumptions - Document Automation	DCSOPS	GHQ-PPD	GHQ-95 Peacekeeping Personnel Replacement Data	DCSOPS
ARF	Army Required Forces	DCSOPS	GHQ-X95 P-1	General Headquarters Exercise X95 Phase I	DCSOPS
ARSTRAP	Army Strategic Planning Workshops	DCSOPS	GMAS	Ground Maneuver Army Support	DCSOPS
BF-95	Blue Flag 95	ARCENT	GMAS-IA	Ground Maneuver Analysis Support - Issue Assessment	DCSOPS
BF-II	Blue Flag II	ARCENT	GMAS-II	Gound Maneuver Assessment Methodology - II	DCSOPS
BF3	BLUE FLAG 3	ARCENT	GMAS-NI	Ground Maneuver Analysis Support-Needs Identification	DCSOPS
BFIII-S	BLUE FLAG III Support	ARCENT	HL-95	HAMMERLOCK 95 Pol-Mil Game	DASG
BLACKJACK 95	Assumptions Working Group for Campaign XXI	DCSOPS	JAMIP/JWAR	Joint Analytic Model Improvement Program, Joint Warfare System	DCSOPS
BOST95	BOLD STROKES 95 Pol-Mil Game	EUSA	JCBD(NT)	Chemical Joint ServiceIntegration Group Analysis Support	DCSOPS
BRAIN	Bayesian Representation & Analysis in International Negotia	DUSA-OR	JROC-TRACK	Tracking JROC through the ARSTAF Lead Agents Working Group	DCSOPS
CAMPAIGN XXI	Campaign XXI	DCSOPS	KAMMO-SLAM	Korean Ammo Distribution System Analysis using SLAM	EUSA
CAMRULE	Cost Analysis for Munitions Rule	ASA	KOBOSH II	Korea, Bosnia, Haiti Analysis, 2nd Version	DCSOPS
CANIA-2	Campaign Analysis Nuclear Impact Assessment - 2	DCSOPS	KURSK II	The Battle of Kursk, Southern Front, a Validation Database	DUSA-OR
CARSTAR-94	Campaign Analysis for Army Strategic Force Architecture-94	DCSOPS	LIBAITAN	Linking BASOPS Investments to Training & Readiness Analysis	ACSIM
CATMID	Campaign Analysis for Integrated Theater Missile Defense	CAA	LINGLANG-II	Linguist and Language Analysis II	DCSINT
CORAL REEF	Correlate Funding to Readiness for Reserve Forces	OCAR	MINIFOM-95	Value Added Analysis Support to Mini POM 97-02	DCSOPS
CURAM	Chemical Unit Requirements Analysis Methodology	DCSOPS	NEARFIA	Northeast Asia Regional Forces Intelligence Assessment	CAA
DFP	Dual Force Packages	FORSCOM	NEDS	A Nexus of Environmental Decisionmaking in the Services	ACSIM
DSM I	Decision Support Modeling - Single MRC	EUSA	NIGERIA-95	NIGERIA-95 Issues Workshop	DCSOPS
DSM II	Decision Support Modeling II- Dual MRC	EUSA			

NIMBLE DANCER	Nimble Dancer Joint Staff Support	DCSOPS	TU-95	Tactical Wheeled Vehicle Modernization Update - 95	DCSOPS
NKAE	North Korean Artillery Effects	EUSA	VW	Vigilant Warrior	CAA
OLYMPUS-94	OLYMPUS-94 Pol-Mil Game	USAREUR	WARRU-NEA	WARREQ 01 - Army Reserve Requirements Update - NEA	DCSOPS
PERSREP-GHQX95	Personnel Replacement Requirements Analysis GHQX95 Scenario	PERSCOM	WARRU-SWA	WARREQ 01 - Army Reserve Requirements Update - SWA	DCSOPS
PPROFOR	Power Projection Forces	DCSOPS	WIDCOMP	War Fighting Impact of Delaying the Comanche Program	DCSOPS
PROSPECT	Plan Research Operations Strategy for P2 Efforts	ACSIM	WRAC-NEA	Wartime Requirements	DCSOPS
PSS-VULFACS	Vulnerability Rates for Personnel	CASCOM	WRAC-SWA	Adverse Case - Northeast Asia Wartime Requirements	DCSOPS
REIN DEER	Service Support Branch Researching Environmental Initiatives & Decision Evaluation Rules	ACSIM	XMLRS	Adverse Case - Southwest Asia Counter MLRS	SARD
REPREPO	Reconstitution of the Prepo-Afloat Package	DCSOPS	FY94 STUDIES & CONTRACTS		
RSOI-GDAS	Reception, Staging, Onward Movement and Integration - GDAS	EUSA	ACRONYM	TITLE	SPONSOR
SAIM-11/94	SAMAS November-94 Update of Reserve Component Data	ACSIM	ABC-SWA	ARSTAR-94 Base Case - Southwest Asia	DCSOPS
SOA	Stockage Objective Analysis	DCSOPS	ACAP 94	Army Support of Cooperation & Peacekeeping 94	DCSOPS
SOMR-HA	SRA-03 OOTW Movement Requirements - Humanitarian Assistance	DCSOPS	ARSTAR-94	Army Strategic Force Architecture Study - 94	DCSOPS
SOMR-LRC	SRA-03 OOTW Movement Rqmts Lesser Regional Contingency	DCSOPS	ARSTAR-94 DA	ARSTAR-94 Deployment Analysis	HQDA
SOMR-PE	SRA-03 OOTW Movement Requirements - Peace Enforcement	DCSOPS	CASRA-03	Campaign Analysis for Support Requirements Analysis 2003	DCSOPS
SOMR-PK	SRA-03 OOTW Movement Rqmts-Peace Keeping	DCSOPS	COSAGE-03	Combat Samples - 2003	HQDA
SPT2XXI	Analytical Support to Force XXI	DCSOPS	COSAR	Joint Combat Sample Request	DUSA-OR
SRA-03 DA	SRA-03 Deployment Analysis	HQDA	CTLS-93	Concurrent Theater Level Simulation - FY93	DUSA-OR
SRA-AC(OWIT)	SRA - Adverse Case (Only War in Town)	DCSOPS	CVAS	Corps-level Analysis Team, VAA III Support	DCSOPS
SRA03-MED-FACT	SRA-03 Medical Planning Factors Alternatives Analysis	DCSOPS	E-MAR	EUSA OPLAN - Major Ammunition Requirements	EUSA
SUSCM	Support Slice for C-17 Movement	DCSOPS	ETAJUP	Equitableness of Treatment in Army Judicial Proceedings	DCSPER
SWA-FOPROA	Southwest Asia Force Projection Assessment	ARCENT	FOUNDATION 93	Strategies for the Information War	DCSOPS
SWAAGS	South West Asia Armored Gun System Effectiveness Analysis	DCSOPS	FRPFO	Force Requirements Planner for Peace Operations	DCSOPS
SWAHAKO	SWA and Haiti's impact on Korea	DCSOPS	FUSSPRINT	Future USAREUR Site Selection Prog for Reduction in Troops	USAREUR
T-CAN 02	Tactical Missile Defense COEA Analysis NEA 2002	USA SSDC	GAS	GHQ-94 Analytical Support	DCSOPS
TARA	TAA Ammunition Requirements Analysis	DCSOPS	GDAS-ADD	GDAS Advanced Development	CAA
TAURUS-94	TAURUS-94 Pol-Mil Game	USAREUR	GDAS-TEST	Global Deployment Analysis System - TEST	CAA
TERCDA	TAA03 Engineer Regional Construction Data and Analysis	DAEN	JCHEMRATES II	Joint Service Chem Defense Equipment Consumption Rates II	DCSLOG
TOSCA	Tactical Engineering Mobility System O&S Cost Analysis	DCSOPS	KURSK I	The Battle of Kursk, Southern Front, Validation Database	CAA
TOSFRAM	TAA03 OOTW Support Force Requirements/Analysis Methodology	DCSOPS	MDSQ-EVAL	Ammunition Minimum Distribution System Quantity Planning Factors Evaluation	DCSOPS
TRAP	Transportation Rail and Pipeline Denial Analysis	DCSOPS			
TRSDOC03	Theater Resolution Scenario Documentation for TAA03	DCSOPS			

MIKIMAC-94	Mission Kill Metric as Applied to Combat Models	DUSA-OR	DEMOB	Demobilization Issues Workshop (GHQ95)	DCSOPS
MOBCEM-RD	Mobilization Capabilities Evaluation Model - Redesign	DCSOPS	DIVRATES	Divisional Rates-Killed/Captured/MIA & WIA	DCSPER
MRS BURU	Mobility Requirements Study Bottom Up Review Update	DCSLOG	EAD-CASRATES	Non-Divisional Wounded in Action Rates for the Army	PERSCOM
PAPA	Pollution Abatement and Prevention Analysis	ASAILE	EAFA	Early Arriving Forces Analysis	DCSOPS
PYONG-WHA 93	Pol-Mil Issues Analysis for Exercise ULCHI FOCUS LENS 93	EUSA	EARR	Engineer Allocation Rule Revision	DCSOPS
READMISSIONS	Personnel Attrition Rates Historic Land Combat Operations: A Note on Probability of Readmissions & Multiple Wounds	DUSA-OR	EU-94 GF-94	EUROPA 94 Pol-Mil Game GREEN FLASH Pol-Mil Game	USAREUR USARPAC
TCAS	Theater Capabilities Assessment Study, Phase I	DCSLOG	GHQ PLAYER	General Headquarters Exercise-94 Player	DCSPER
VAA 96-01	Army Program Value Added Analysis 96-01	DCSOPS	GHQ-NEA I	GHQ-94 MRC-W Campaign Simulation (Part I)	DCSOPS
WARREQ MRC-E	Wartime Requirements MRC-East, FY 2001	DCSOPS	GHQ-NEA II	GHQ-94 MRC-W Campaign Simulation (Part II)	DCSOPS
WARREQ MRC-W	Wartime Requirements MRC-West, FY 2001	DCSOPS	GHQ-S	GHQ-X94 Exercise Control Group Support	DCSOPS
			GHQ-S II	GHQ-X94 SWA & NEA Campaign Analysis w/Logistics Assessment	DCSOPS
			GHQ-S III	GHQ-X94 Exercise Group Support III	DCSOPS
			GHQ-S IV	GHQ-X94 SWA Campaign Analysis Wrap-up	DCSOPS
3DCAN	Three Divisions Corps Analysis	TRADOC	GIRM	Gelling Installation Resource Management	ACSIM
555 CA	555K Endstrength Capabilities Assessment	DCSOPS	HDSS	Heavy Division Support Slice	DCSOPS
AAMAA	Anti-Armor Mission Area Analysis	DCSOPS	HILICSS	Haiti's Impact on Light Infantry and Combat Service Support	DCSOPS
AAMAA-C	Anti-Armor Mission Area Analysis - COSAGE	OSD	IBUR-OT	Intelligence Bottom-Up Review - Operational Tasks	DCSOPS
ACAP II 94	Army Support of Cooperation and Peacekeeping II 94	DCSOPS	JTAGS-EA	Joint Tactical Ground Station-Effectiveness Assessment	ASARDA
ALP-ES	Assessment of Long-Term Peacekeeping - Endstrength	DCSOPS	KC95	Korean Conflict '95: A Force Ratio Analysis	EUSA
ALP-FT	Assessment of Long-Term Peacekeeping - Personnel Turbulence	DCSOPS	KOBOSH	Korea, Bosnia, Haiti Analysis	DCSOPS
APOF	Analysis of Peace Operations Functions	DCSOPS	LINGLANG	Linguist and Language Analysis	DCSINT
ARRCS-SUFA	Allied Rapid Reaction Corps (South) Support Force Analysis	USAREUR	LMS-RTW	Louisiana Maneuvers Support Road to War	TRADOC
ASUPOW	Analysis of Support Units in Peace Operations and War	DCSOPS	MP01-EPW	Military Police 2001 - Enemy Prisoner of War	DCSOPS
CL-94	CALYPSO 94 Pol-Mil Game	DCSOPS	NEAPEREQ	Personnel Replacement Requirements Analysis, GHQ NEA	DCSPER
CLIKAMMO	Campaign Logistics in Korea: Ammunition Availability Impact	EUSA	NLWE	Non-Lethal Weapon Employment	DUSA-OR
COMA	Support to Technical Advisor for Calibration of MACRO	DCSOPS	OLMA-I	Operational Level Military	ARCENT
COSSEUC	Combat Samples in Support of USEUCOM OPLAN	USEUCOM	OLMA-194	Operational Level Military Assessment - Iraq 1994	ARCENT
CT94	CERTAIN TRUMPET 94 Political-Military Game	EUSA	OOTW-SRA(HA)	Operations Other Than War - SRA (Humanitarian Assistance)	DCSOPS
DEEP FIRES I	ATACMS Missile Requirements	DCSOPS	OOTW-SRA(LRC)	OOTW - SRA (Lesser Regional Contingency - Light)	DCSOPS
DEEP FIRES II	ATACMS Block II Missile Requirements	DCSOPS	OOTW-SRA(PE)	Operations Other Than War - SRA (Peace Enforcement)	DCSOPS

FY94 QUICK REACTION ANALYSES

OOTW-SRA(PK)	Operations Other Than War - SRA (Peace Keeping)	DCSOPS	FY93 STUDIES & CONTRACTS		
PECAN	Peacekeeping Cost Analysis	DCSOPS	ACRONYM	TITLE	SPONSOR
PERS-MOB-SPT1	Personnel Mobilization Planning Support to TAPC-1	PERSCOM			
REACH	Re-Evaluation of the Analysis on Ft. Chaffee	DCSOPS	AFFDA 95/2001	Army Force Planning Data & Assumption - FY 95/2001	DCSOPS
REPWREP	Review EPW Report	DCSOPS	AORNFS	Army Operational Requirements for Nuclear Fire Support	DCSOPS
ROKOB	Republic of Korea Ground Forces Order of Battle Update	EUSA	ARCAS	ARDENNES Campaign Simulation	CAA
RSOI-O	Reception, Staging, Onward Movement & Integration Operations	EUSA	ARM	Active/Reserve Mix Study	DCSOPS
SADEX	SADARM Examination	DCSOPS	ARMIN-DA	Army Initiatives-Deployment Analysis	DCSOPS
SH-93	SHALIMAR 93 Pol-Mil Game	USARPAC	ARSTAR-92	Army Strategic Force Architecture - 92	DCSOPS
SH-94	SHALIMAR 94 Pol-Mil Game	USARPAC	BAMS	Biological Assessment and Modeling Study	DCSOPS
SRA-BC(NS)	SRA-Base Case (Near Simultaneous-East)	DCSOPS	CHEMDT	Chemical Deterrence Study	DCSOPS
STAB UP	Update of the STAB QRA	DCSOPS	DRAGON-ANVIL	USAREUR Political-Military Cell Preparation	USAREUR
SWA-RA	Southwest Asia Risk Analysis	ARCENT	EAD-CAS-MET	Echelon Above Division Casualty Estimation Methodology	DCSPER
SWA-RA II	Southwest Asia Risk Analysis II	DCSOPS	EAHAP	Economic Analysis of HQDA Automation Program Study	SEC ARMY
TALPANAL	Total Army Language Program Analysis	DCSINT	EASTWIND 93	Political Environments Sensitivity Pol-Mil Game	USARPAC
TERPS	The Environment Resources Programing Study	ACSIM	EFES	Expanded Force Employment Study	DCSOPS
TRAIN REQ	TRAINLOAD Requirements Update	DCSOPS	EMA	Evaluation of the MDEF Architecture Study	PAE
TRAINLOAD	Training Load on Active Duty Installations	DCSOPS	ETAJUP	Equitableness of Treatment in Army Judicial Proceedings	DCSPER
TU-93	Tactical Wheeled Vehicle Modernization Update - 93	DCSOPS	J-CHEMRATES	Joint Service Chemical Equipment Consumption Rates Defense	DCSLOG
VAA: VAST	Value Added Support for TRADOC	TRADOC	JKACS	Joint US-ROK Arms Control Study, Game I	EUSA
VAAJAPA	Value Added Analysis: Javelin and Predator Analysis	ASARDA	KPOL	Korean POL Distribution Analysis	EUSA
WARREQ-NSC	WARREQ-01 No SADARM	DCSOPS	LATAM 2001	Latin America Scenarios through 2001	DCSOPS
WRSA	War Reserve Stocks for Allies	EUSA	MADCAP-1	Combat Samples for Master Data Calibration Project-1995	ARCENT
FY94 OTHER PUBLICATIONS			MCOG I	Military Centers of Gravity Study - I	EUSA
STS DOC	Spreadsheet Trans-shipment Simulation Documentation	CAA	NIA-1	Nuclear Impacts Analysis - 1	DCSOPS
USOB	US Order of Battle Update	CAA	PAR S&V	Personnel Attrition Rates in "Historical Land Combat Operations:" - Susceptibility & Vulnerability of Major Anatomical Regions	CAA
CEMWES	Requirements for running CEM at WES	CAA	PAR-P1	Personnel Attrition Rates in Historical Land Combat Operations - Phase 1	CAA
DATA DISK	A catalog of Attrition & Casualty Data Base on Diskette	DUSA(OR)	RCTIFYRS	Reserve Component Training Installation Facility Yearly Requirements Study	DCSOPS
MANHATTAN	MANHATTAN Project Report	CAA			
SPOP	Study Process Overview Pamphlet	CAA			

REEP	Renewables and Energy Efficiency Planning	COE	DIVCOST	Active-Reserve Division Costing	DCSOPS
ROKMOD II	Republic of Korea Modernization II	EUSA	EFSA	Engineer Factor Sensitivity Analysis	COE
SRA-01	Support Requirements Analysis 2001	DCSOPS	FE 90-93	Force Employment 90-93	DACS
STOCEM3	Stochastic Concepts Evaluation Model - Phase 3	CAA	FSCM-BA	Force Structure Composition Model Branch Analyzer	DCSOPS
TAA-01AE	Total Army Analysis - 2001 Alpha-East	DCSOPS	GEMS	GEMS For Analysis	DUSA-OR
TACAAN	TACWAR Attrition Analysis	CENTCOM	GHQx -93	GHQx Issues Workshop	TRADOC
UC RETRO	USAREUR Class V/VII Retrograde	USAREUR	HEAT	Helicopter Effectiveness Analysis Task	DCSOPS
VECCEM II	Structured Programming for Large Simulation II	DUSA-OR	ICE-PAC3	Intercept & Chemical Effects-PATRIOT Advanced Capabilities3	DUSA-OR
WARREQ-95K	Wartime Requirements Analysis-Korea, FY 1995	DCSOPS	JKACS-CEM-I	Joint US-ROK Arms Control Study-CEM-I	EUSA
WARREQ-95M	Wartime Requirements Analysis-SWA, FY 1995	DCSOPS	JTAD-MAA	Joint Theater Air Defense-Mission Area Analysis	DCSOPS
WHITE RAIN 92	Chemical Weapons Deterrents Alternatives Strategies Wargame	DCSOPS	LAMS	Louisiana Maneuver Support	TRADOC
			LMI-QRA	Logistics Management Institute - QRA	OSD
			LRPMW	Long-Range Planning	DCSOPS
			MCOG II	Methodology Workshop	
			MCOG IV	Military Centers of Gravity Air Campaign	EUSA
			MCOG V	Military Centers of Gravity IV - Concept of Operations	EUSA
			MCOG VI & VII	Military Centers of Gravity V - nK Intent	EUSA
			MCOG VI-DA	Military Centers of Gravity VI&VII, Seasonal & TPFDD Variations	EUSA
			MED-01 DNBI	Military Center of Gravity VI-Deployment Analysis	EUSA
			MEMU	Medical 2001-Rules and DNBI Rates	DASG
			MERLINS STAFF	Mine Expenditure Methodology Update	DCSOPS
			PAC3REVIEW	MDEF Equation for Resource Linking System Supporting Trooplists	PAE
			PALACE	Patriot PAC-3 Missile Program Review	DUSA-OR
			PEKO	Patriot Lethality and Chemical Effects	DCSOPS
			RAM CA-1	Peacekeeping Operations Roles and Missions	DCSOPS
			RAMEUR	Capabilities Analysis Requirements Analysis for MRC-Europe Movement	DCSLOG
			REESIN	Requirements Analysis Renewables and Energy Efficiency Sustainable Investment	ASA
			ROKMOD 94-95	Republic of Korea Modernization 94-95	EUSA
			ROKMOD LP	Republic of Korea Modernization Linear Programming	EUSA
			S3C	Self Service Supply Centers	DCSLOG
FY93 QUICK REACTION ANALYSES					
ACAP 93	Army Support of Cooperation and Peacekeeping Workshop	DCSOPS			
ALP	Assessment of Long-Term Peacekeeping	DCSOPS			
ANFORSC	Assessment of NATO Force Success Criteria	DCSOPS			
ANSG	Analytical Needs Study Group	USARSO			
ARM-ACBOS	Active Reserve Mix-Assessment of Congressional Budget Office Force Options	ASAMRA			
ARSTAR CA-2	ARSTAR Capabilities Analysis - 2	DCSOPS			
ARSTAR CA-3	ARSTAR Capabilities Assessment	DCSOPS			
ARSTAR CA-4	ARSTAR Capability Analysis-4	DCSOPS			
ARSTAR CA-5	ARSTAR Capability Analysis - 5	DCSOPS			
ASP-92	Army Strategic Force Planning Workshop 92	DCSOPS			
BAT CAPER	Brilliant Anti-Tank Munition's Capability at Extended Range	DCSOPS			
CHAPARRAL-93	CHAPARRAL 93 Law Enforcement Military Simulation	FORSCOM			
CHEMDET II	Chemical Deterrence Survey	DCSOPS			
CMASS SFT	Counterdrug Modeling & Simulation System Support	USARSO			
CSA-CI	CSA Calendar Improvement	DACS			
DA-ORH	Deployment Analysis, Operation Restore Hope	DACS			

SEMM	Support to Engineer and Mine Warfare Modernization Analysis	DCSOPS	PK COS	COSAGE Probability of Kill Methodology Basic Data Requirements	CAA
SILENT	Survivability Issues Longbow Enhanced Tactics	DUSA-OR	UCUM	COSAGE User's Manual, Volumes I & II	CAA
SLS STAB	Senior Leaders' Seminar Support to Total Army Basing Study	EUSA JCS	TEAM ABRAMS	Test, Evaluation, and Modelling of ABRAMS	CAA
STRAT-MOD	Stratification Model of Theater Casualties	DCSPER			
SUFRAS	Support Force Risk Assessment	DCSOPS			
TAA-01AW	Total Army Analysis - 2001 Alpha-West	DCSOPS	AIMS 99-I	Army Integrated Mobilization Study-99, Phase I	DCSOPS
TAB	The Army Briefing	DCSOPS	ARC	Analysis of Army Reserve Component Clothing Replacement Process	DCSLOG
TAC	Tri-service Standoff Attack Missile ATACM Comparison	DCSOPS	ARSTAR	Army Strategic Force Architecture	DCSOPS
TAC BAT	Tactical Air Contributions in the BAT Study	DCSOPS	ASOS	Army Support Options Study	ASAMRA
TACOS	TAA-01A/COMRAD	DCSOPS	BE-91	BEAU GESTE - 1991	DCSOPS
VAA: DICE	Value Added Analysis: Declining Investment in Coming Era	DCSOPS	C2A2	Political-Military Game Command & Control	DCSOPS
VAA: GREYBEARDS	VAA: General Officer Rec Evaluations for Economic Analysis of Research & Development Stra	DCSOPS	CARG-O	Acquisition Alternative Study	CAA
VAA: MINI POM I	VAA: Mini Program Objective Memorandum - I	PAE	CASMO-VAL	Conventional Arms Reduction Game - Optimized	OPTEC
VAA: MINI POM II	VAA: Mini Program Objective Memorandum - II	PAE	COMRAD	Combat Analysis Sustain-ability Model Verification and Validation	ASAMRA
WARREQ-01 DA	Wartime Requirements 2001 Deployment Analysis Support	DCSOPS	CTL5-91	Component Requirements & Authorization Determination	DUSA-OR
WARREQ-95E	Wartime Requirements Analysis-Europe, FY 1995	DCSOPS	CURE	Concurrent Theater Level Simulation	DCSOPS
WARREQ-95K	Wartime Requirements Analysis-Korea, FY 1995	DCSOPS	E-CEP	Chemical Unit Requirements	DCSPER
WARREQ-EURUP-99	Wartime Requirements Europe Updated - 99	DCSOPS	HIGHWIRE 92	Enhanced Casualty Estimation Planning	DCSOPS
			IAMS II	Nuclear Weapons Political Issues	DCSOPS
			INFSCAP	Political-Military Game Integrated Army Mobilization Study-Phase II	DCSOPS/DCSLOG
			KOPLAN-91	Interservice Nuclear Fire Support Capabilities	DCSOPS
			META	Korean Operation Plan-1991	EUSA
			RCIF	Application of Meta-Analysis Review of the Calculation of Ammunition, Petroleum, and Equipment Requirements (CALAPER) Input Factors	CAA
				Republic of Korea - Extended Air Defense	DCSOPS
				Nuclear Weapons Require-ments Political-Military Game	DCSOPS
				Strategic Mobility Alternatives	DCSOPS
				Stochastic Concepts Eval-uation Model-Phase II	CAA
				Tactical Combat Samples & Linkage to TACWAR	EUSA
				Concurrent Processing and Time Warp Development	DUSA-OR
				Army Program Value Added Analysis 94-99 - Phase II	DCSOPS
FY93 OTHER PUBLICATIONS					
AOT-K	Anatomy of a Theater-Korea	CAA			
CALAPER-92	Munitions Consumption Program Input-Output Guide	CAA			
CAMP-REV1	Computer Assisted Match Program User's Manual First Revision	CAA	ROK-EAD	Republic of Korea - Extended Air Defense	CAA
CORBAN-UAV	Possible Modifications to the Corps Battle Analyzer Model	CAA	SKYFLASH 92	Nuclear Weapons Require-ments Political-Military Game	DCSOPS
DOC TRANSMO	Documentation for TRANSMO Users and Analysts	CAA	SMA	Strategic Mobility Alternatives	DCSOPS
GLOFAM-MI	Global Force Allocation Model-Methodology Improvement	CAA	STOCEN 2	Stochastic Concepts Eval-uation Model-Phase II	CAA
KCAC 2000	Korean Campaign Analysis Comparison-2000	CAA	TAC LINK	Tactical Combat Samples & Linkage to TACWAR	EUSA
KORCAP	Korea Capstone	CAA	TW-91	Concurrent Processing and Time Warp Development	DUSA-OR
			VAA 94-99	Army Program Value Added Analysis 94-99 - Phase II	DCSOPS

VALOR	Value Added Linear Optimization of Resources	CAA	EADIMP	Economic Analysis of the DCSOPS Information Management Program	DCSOPS
VECCEM	A Structured Approach to Large-Scale Battlefield PHASES I&II Simulation	DUSA-OR	EVADED	Evaluation of Elected Voluntary Alternate DESCOM Discipline	DCSPER
WARREQ 99	Wartime Requirements, Fiscal Year 99	DCSOPS	FASTAEDP	Fast Total Army Equipment Distribution Program	DACS
FY92 QUICK REACTION ANALYSES			FOSMODTOS-IN	Force Structure and Modernization Tradeoff Analysis - Inputs	DCSOPS
AAF	Army Availability Factor	USAFISA	FRONTIER 92	Global Wargame FY 1992	DCSOPS
ACFAA	Army College Fund Allocation Analysis	DCSPER	GETAR-99	Global Excursion of Transportation Allocation Rules, SRA-99	TRADOC
AIMS II-M	Army Integrated Mobilization Study II - Medical	DASG	HDASSCS	Heavy Infantry Division Analysis of Soldier Support System Cost Study	AMC
AIR OPTIONS	Aircraft Resource Allocation Options	DCSLOG	HELL vs. LONG IPAEMA	HELLFIRE versus LONGBOW Investment Programs of the Army: Economic & Modernization Analysis	DCSOPS
ALADDIN 92	ALADDIN 92	CAA	IRAFORMS	Initial Requirements Analysis for MRC-W Scenario	DCSOPS
ARSTAR CA-1	ARSTAR Capabilities Analysis-1	DCSOPS	KNOTS	Knowledge of Time Slippage	DCSLOG
ASFPW	Army Strategic Force Planning Workshop	DCSOPS	KOWAP	Korean War Plan	DCSOPS
AUTOCORE	Analytic Support to the Field Test of the Automated Core Document (ACD) System	DCSPER	KOWAP-MOB	Korean Warfighting Operations Plan-Mobility Assessment	EUSA
B-FASS	Base Force Analysis	VCSA	LC3	Light Contingency Corps Capability	EUSA
BASFORMA	Base Force Reductions and Modernization Alternatives	DACS	LC4	Light Contingency Corps Capability Continued	DUSA-OR
BIODEF	Biological Defense Analysis	DCSOPS	LIDASSCS	Light Infantry Division Analysis of Soldier Support System Cost Study	DUSA-OR
CALOG SOS	Comparison of Army Logistics Support to Other Services	DCSLOG	MEDEVAC 2001	Medical Evacuation 2001	AMC
CCASM	Contingency Corps-Armored Systems Modernization	DCSOPS	MP EXC 99	Military Police Excursion, TAA-99	DASG
CFCS	Combined Forces Command Sustainment Assessment	EUSA	MRC-CASREP-97	Major Regional Contingency Casualty Replacement Requirements Report	DCSOPS
CFCS II	Combined Forces Command Sustainability Phase II	EUSA	MRSSWA-POMEX	Mobility Requirement Study-Southwest Asia, POMCUS Excursion	DCSPER
CFCS-UP	Combined Forces Command Sustainability-Update	EUSA	MSS-TDB	Mobilization Stationing Study-Transportation Databases	DCSOPS
CHEMSTORM	Chemical Warhead Impact on Desert Storm	DCSOPS	POMCAPE	POMCUSITE System Capability Expansion	ChOE
CIA	Comanche Impact Analysis	DCSOPS	POMCAPE SME	POMCUSITE Capability Expansion Siting Model Enhancement	USAREUR
CONCOR-UMD	Contingency Corps Unit Movement Data	TRADOC	POMEVAL 94-99	Evaluation of POM 94-99 Replacement Maintenance Using SLAM	USAREUR
COSAA	Combat Samples for the Air Force Studies & Analyses Agency	DUSA-OR	RAM SLAM	Replacement Maintenance Using SLAM	PAE
COSMIC	Cost Model Input Calculations	PAE	RAM SLAM 2	Replacement Maintenance Using SLAM - II	EUSA
DNBI 2001	Disease and Nonbattle Injury Rates-2001	DASG	RCSTAS	Reserve Component Stationing Study	DCSOPS
DOK	Defense of Korea	VCSA	RETRO-EUR	Retrograde-Europe	DCSOPS
DS-SEAD	Desert Storm-Suppression of Enemy Air Defense	CAA			
DTCTS-SWA	Deployment-TRADOC Common Teaching Scenario-Southwest Asia	TRADOC			

ROKMOD	ROK Modernization	EUSA	FY92 OTHER PUBLICATIONS		
ROK-MODS	ROK Modernization Sustainability	EUSA			
SAWVAS	Support Area Wheel Vehicle Vulnerability Assessment	EUSA	ARBSIT	ATVAL Recommendations: Brigade Samples in Theater	CAA
SCSC-M	Support to Conventional Systems Committee-Munitions	DCSOPS	ATVAL II	Attrition Calibration (ATCAL) Evaluation Phase II - Indirect Fire	CAA
ST BARBARA 91	Army Nuclear Fire Support Synergistic Game	DCSOPS	ATCAL P2SIM	ATCAL Phase II, Simscript II.5	CAA
SWA 2000	Southwest Asia 2000	DCSOPS	BAMC	Benchmark for Artillery Munitions Consumption	CAA
TARO 91	Political-Military Game TARO 91	USARPAC	E-CALAPER	Enhancements to Calculation of Ammunition, Petroleum, and Equipment Rates Process Review	CAA
TD90	Tae Kwon Do, FY 90	EUSA			
THAADS-SWA	Theater High Altitude Air Defense System-Southwest Asia	DCSOPS	CAS-IMPACTS99	Impacts of Force Structure (FY99) Changes on Casualty Generation Report	CAA
TPUG	Tank Propulsion Upgrade	DACS			
TRETOAD+	The Restructured European Theater of Operations Air Defense Plus	PAE	CASPRO	Casualty Estimation Process Review	CAA
TS	Tank Sight	DCSOPS	FSSS-MR	FASTALS Sensitivity with Small Scenario-Minor Rules	CAA
TU-92	Tactical Wheeled Vehicle Modernization Update - 92	DCSOPS	K-TBMD	Korea - Tactical Ballistic Missile Defense	CAA
UAV-ROH	Unmanned Aerial Vehicle to Replace Older Helicopters	PAE	VOLLEY FIRE	Foundations of the General Theory of Volley Fire	CAA
VAA: AMAVRTL	VAA: Analysis of Modernization Alternatives at Various Research, Development, and Acquisition (RDA) Total Obligational Authority Levels	PAE			
			FY91 STUDIES AND CONTRACTS		
VAA: CSAOR	Value Added Analysis: Chief of Staff Army Offsite Review	DCSOPS	A2D2P2	Anti-Armor Defense Data, Phase II	CAA
VAA: LAPS	Value Added Analysis: Long-Range Research, Development, and Acquisition Plan (LRRDAP)	DCSOPS	ARIM	Army Resource Integration and Management	DCSOPS
	Analysis Planning Session		ATVAL	ATCAL Evaluation	CAA
VAA: LGORS	Value Added Analysis: Long-Range Research Development, and Acquisition Plan (LRRDAP)	DCSOPS	CHEMPHASE	Chemical Protection Hazard Assessment in Europe Study	DCSOPS
	General Officer Review Support		CMA	Counter-drug: Mandate for the Army	DCSOPS
VAA: SAMQ	Value Added Analysis: Secretary of the Army Modernization Questions	SEC ARMY	DSSLL	Desert Shield Strategic Lessons Learned	DCSOPS
VAA:EATSM	Value Added Analysis: Economic Analysis of Tradeoffs in Structure & Modernization	PAE	DYNAFOR	Accessions Forecasting for Dynamic Force Structures	DCSPER
WW-CASREP-97	Worldwide Casualty Replacement Requirements Report, FY97	PERSCOM	EMPDA	Enhanced Massively Parallel Deployment Analysis	DUSA-OR
			ETRANS	European Transportation Requirements for Backhaul of Personnel/Cargo	DCSLOG
			FES	Force Employment Study	DCSOPS
			FASTAUTO	FASTALS Automation Contract	CAA
			IMAM	Information Management Modernization Study	DISC4
			IV&V FORCEM C2	IV&V FORCEM C2 Module	CAA
			IV&V GDAS II	IV&V Global Deployment Analysis System, Phase II	CAA
			IWAS-EC	Initial Wartime Army Support-Effectiveness & Capability	DCSLOG
XDTRAP	Counterdrug Transportation Requirements Analysis Program	USARSO			

LRAMRP	Long Range Army Materiel Requirements Plan Study	TRADOC	CMMS-NEA	Congressionally Mandated Mobility Study, NEA	DCSOPS
MARTEP	Maritime Terminal Evaluation Program	DCSLOG	CMMS-SWA	Congressionally Mandated Mobility Study, SWA	DCSOPS
NATO 2000V OMNIBUS-91F	NATO 2000 Appendix Operational Readiness Study FY-91 (FORCEM)	DCSOPS DCSOPS	CMMS2-AMD	Congressionally Mandated Mobility Study 2, Army Mobility Data	DCSOPS
POMCUSITE	POMCUS Unit Siting Alternatives Study	USAREUR	CORCFE	CORBAN Centralized Forces Europe	PAE
PROBATIONS	Probabilistic Foundations for a Fully Stochastic Theater-Level Ground Combat Simulation	CAA	COSWA-AF-MEA	COSWA-Alternative Forces-Munition & Equipment Analysis	DCSOPS
RACCK	Regional Assessment Combat Capability-Korea	EUSA	COSWA-AIM	COSWA - Air Interdiction Maneuver	DCSOPS
RACCK-CALAPER	Regional Assessment Combat Capability-Korea, Calculation of Ammo, Petroleum and Equipment	EUSA	COSWA-ALT	COSWA - Alternative Contingencies	DCSOPS
RACCK-CHEM	Regional Assessment Combat Capability-Korea, Chemical Analysis	EUSA	COSWA-DCAS	COSWA - Division Casualty Stratification Analysis	DCSPER
RACCK-DA	Regional Assessment Combat Capability-Korea, Deployment Analysis	EUSA	COSWA-RAN	COSWA - Requirements Analysis	DCSOPS
RACCK-FASTALS	Regional Assessment Combat Capability-Korea-FASTALS	EUSA	COSWA-RES	COSWA - Residual Force Requirements	DCSLOG
SCALED II	Simple Combat Attrition Law Evaluation Data, Phase II	DUSA-OR	COSWA-SPT	COSWA - Supportability Analysis	DCSOPS
SOVA	Soviet Air Operation Analysis Study	DCSOPS	COSWA-STK	COSWA - Stockage	DCSOPS
SRA-99	Support Force Requirements Analysis - 1999	DCSOPS	COSWA-STK-MEA	COSWA - Stockage-Munitions & Equipment Analysis	DCSOPS
STRADER	Strategic Deployment Analysis Review	DCSLOG	COSWA-SUM	COSWA - Summary	DCSOPS
TACNUC	Theater Analytic Nuclear Model	DCSOPS	COSWA-SUM-UP	COSWA - Summary Update	DCSOPS
TWVMU	Tactical Wheeled Vehicle Modernization Update	DCSOPS	COSWA-SUMFOR	COSWA - Summary FORSCOM	DCSOPS
VALUE ADDED	Value Added Analysis 90-97	PAE	COSWA-SUPAN	COSWA - Support Analysis	DCSOPS
			COSWA-XAIR	COSWA - Extended Air Operations	DCSOPS
			COVARA	Cost Variability Analysis	USASAC
			CPOST	Post-CFE Posture Assessment	DCSOPS
			CRISK	CFE Circumvention Risk Assessment	DCSOPS
			DAIRICOWS	Detailed Analysis/Invest. of Resource Items & Costs of Weapon Systems	DCSOPS

FY91 QUICK REACTION ANALYSES

AAMU	Army Aviation Modernization Update	DCSOPS	DESERT RAMP	Desert Ramp (There is no summary for this)	DCSOPS
AAMU-SR	Army Aviation Modernization Update-Scout Relook	DCSOPS	DSAD-FROG	Desert Shield Air Defense-Free Rocket Over Gound	DCSOPS
ALF-1	Airlift Force Study	VCSA	DSAD-PS	Desert Storm Air Defense Patriot Stockage	DCSOPS
ARVIS-DA	Army Vision Deployment Analysis	DCSLOG	DSAW-ATEMS	Desert Shield Air Warfare-ATACMS Employment	DCSOPS
BA91	Political-Military Game BALBOA 91	USARSO	DSAW-EAD	Desert Shield Air Warfare-Extended Air Defense Analysis	DCSOPS
CADAVR	CORBAN Air Defense Artillery Validation & Review	PAE	DSAW-IUD	Desert Shield Air Warfare-Israeli Urban Defense	DCSOPS
CASIO	Chemical Attacks Against Contingency Staging Areas	DCSOPS	DSCA I	Desert Storm - Campaign Analysis I	DCSOPS
CMMS II-CO	Congressionally Mandated Mobility Study II-CINC Options	DCSLOG	DSCA II	Desert Storm - Campaign Analysis II	DCSOPS
CMMS-NATO	Congressionally Mandated Mobility Study, NATO	DCSOPS	DSCA III	Desert Storm - Campaign Analysis III	DCSOPS

DSCA IV	Desert Storm - Campaign Analysis IV	DCSOPS	STIR-FRI	Stinger Threat-based Inventory Requirement-Fsst	DCSOPS
DSCA V	Desert Storm - Campaign Analysis V	DCSOPS	TA91	Reaction Investigation Japan/Pacific TARO Political Military Game	USARFAC
DSLL	Desert Shield Lessons Learned	DCSOPS	TAFES-II	Total Army Force Evolution Study II	DCSOPS
ETRANS-FOS	European Transportation-Roundout Support	DCSLOG	TAFES II-MA	Total Army Force Evolution Study II-Mobility Analysis	DCSOPS
FLOATPOM	Floating POMCUS Analysis	DCSLOG	VCSA-CLV	VCSA Controlled Munition Assessment	DCSOPS
FOD-FDAT	Forward Deployed Force Alternative	VCSA			
FOMOSA	Force Modernization Sensitivity Analysis	DCSOPS			
FORR-MAN	Force Regeneration/Reconstitution-Mobility Analysis	DCSOPS			
GE-TAR	Global Excursion of Transportation Allocation Rule	TRADOC	A2D2	Anti-Armor Defense Data	DUSA-OR
HARMS	HIMAD Anti-Radiation Missile Survivability Analysis	DCSOPS	AFPD, FY 93-99	Army Force Planning Data and Assumptions, FY93-99	DCSOPS
HO-91	Horizontal-Military Game	EUSA	ALBF-DA	AirLand Battle Future-Deployment Analysis	TRADOC
HOBOCOBA	Homeward Bound Cost-Benefit Analysis	DCSOPS	ALENO	Alternate Enlistment Options	DCSPER
IFC-AMA	Improved Force Closure-Army Mobility Analysis	DCSOPS	ASM-EA	Armored Systems Modernization-Economic Analysis	DCSOPS
IFCA-FAS	Improved Force Capability Support Analysis	DCSOPS	ASM-SUSOPS	Armored Systems Modernization-Multicorps Sustained Operations Analysis	DCSOPS
KOWAP-DA	Korean War Plans - Deployment Analysis	EUSA	CASMO VER I	Combat Analysis Sustainability Model Verification I	CAA
MA91	MAGELLAN 91	DCSOPS	CTLS AIR	CTLS Air Model	SIMTECH
MARCFAC	MARC Availability Factors	USAFISA	CTLS-90	Concurrent Theater-Level Simulation, 1990	DUSA-OR
MOD-U	Modernization Update, 1980-1990	DCSOPS	FOCUS 85-94	Force Comparison US vs Soviet 1985-1994	DCSOPS
MPM-CAS	Medical Planning Module - Casualties	DCSOPS	FORCE 90/97	Force Evaluation, FY 90/97	DCSOPS
MRC-E-C	Mobility Requirements-Major Regional Conflict, East, Case C	DCSOPS	FORCEM/SUN	Interactive FORCEM on SUN	DUSA-OR
MRC-EAST	Mobility Requirements Study-Major Regional Conflict, East, Case B	DCSOPS	FUTEUR	Future Army, Europe	DCSOPS
MRC-WEST	Mobility Requirements Study-Major Regional Conflict, West, Case C	DCSOPS	GABY	Generic Application Blackboard Yoking	DUSA-OR
MRSSWA-DEX	Mobility Requirement Study Southwest Asia, Case D	DCSLOG	GDAS I	Global Deployment Analysis System, Phase I	CAA
NRISK-90	Non-Negotiated Reduction Risk Assessment 1990	DCSOPS	GDAS IV&V	Global Deployment Analysis System, Phase I IV&V	CAA
NSO	National Guard Structure Options	DCSOPS	GOLAN	Wargame Golan Heights '73	CAA
PERSYST	Civilian Personnel Classification System	DCSPER	HOKKAIDO 90	Wargame Hokkaido FY 90	USARJ
PS90	Political-Military Game PilSong 90	EUSA	JMNA-AMR 90	Joint Military Net Assessment-Army Mobility Requirement Study, FY 90	DCSOPS
PS90-II	Political-Military Game PilSong 90-II	EUSA	MOBCEM-FD	Mobilization Capabilities Evaluation Model - Functional Description	DCSOPS
SDOP	Secretary of Defense Option	DCSOPS	NATO 2000	NATO 2000	DCSOPS
SIGINT STORM	Vulnerability of SIGINT Vehicles Within the Context of Operation Desert Storm	ISC	NoREDs	Nonreduction Measures	DCSOPS
			NTWRE-91	Near-Term Wartime Requirements, Europe, FY91	DCSOPS
			OMNIBUS-91E	US Army Operational Readiness Analysis Study-FY91 Europe	DCSOPS
			OMNIBUS-91K	US Army Operational Readiness Analysis Study-FY 91 (NEA)	DCSOPS

FY90 STUDIES AND CONTRACTS

OMNIBUS-91M	US Army Operational Readiness Analysis Study-FY 91 (SWA)	DCSOPS	DSAW-RED	Desert Shield Air Warfare Study	DCSOPS
OMNICHEM	US Army Operational Readiness Chemical Analysis	DCSOPS	ECBAS	Engineer Studies Center Bomber Assessment Study	ESC
P2RAM	Peer Review Process & Accreditation of Models	DUSA-OR	ENACC	Enlisted Accessions Alternatives	DCSPER
PFCA	Program Force Capability Assessment	DCSOPS	EUFORSTAL	European Forward Stationed Alternatives	DCSOPS
POMCANAL	POMCUS Analysis	PAE	FORANT	Future Force Alternative	DCSOPS
PREFOR	Preprocessor FORCEM	MISMA	FUPAC	Future Army Forces Pacific	DCSOPS
PT89	Persian Tiger-89	TUSA	HAWG	Hokkaido Air War Game	USARJ
ROA	Rates of Advance in Historical Land Combat Operations	SEC ARMY	I2A2	Improving Investigative and Audit Analysis	DAS
SOFRS-89	Special Operations Forces Requirements Study	DCSOPS	MEDSWA	Medical Southwest Asia	DASG
SWA-I	Wargame Southwest Asia I	TRADOC	MILRISK	Military Risk Assessment	DCSOPS
TACNUC	Theater Nuclear	CAA	MINI-TAA	Mini-Total Army Analysis	DCSOPS
TW-90	Time Warp Operating System	DUSA-OR	MSAM	Medium Surface-to-air Missile Study	DCSOPS
WGASST	Wargaming and Political/Military Game Assistance	DCSOPS	NUCRED/I	Army Tactical Nuclear Weapons in a Reduced Force Environment, Phase I	DCSOPS
FY90 QUICK REACTION ANALYSES			PLANNER-R&D	LOG PLANNER Extension to Include the Long-range Research, Development, and Acquisition Plan	DCSLOG
ALTFORS-MA	Alternate Forces - Mobility Analysis	DCSOPS	POMCANAL	POMCUS Analysis QRA	PAE
ASWAP	Analysis of Southwest Asia Ports	DCSLOG	POMOP	Program Objective Memorandum Options	DCSOPS
CMEDREQ	CFE Medical Requirements	CSA	PSS-EX	Personnel Service Support-Excursion	DCSOPS
CONCOR-3	Contingency Corps - 3	DCSOPS	PTADS	Persian Tiger Air Defense Study	DCSOPS
CONCOR-SWA	Contingency Corps - Southwest Asia	DCSOPS	Q-FOCUS	Quick - Force Comparison	OCSA-
CONFOR	Contingency Force Planning Issues	DCSLOG	CAIG	US vs Soviet	
CONSTANT-TGSM	Conventional Stability Assessment-Effects of Terminally Guided Submunitions	DCSOPS	Q-FORCE-91	QUICKSILVER - Force Evaluation 91	DCSOPS
CONSTANT-WARN	Conventional Stability Assessment-Warning Time	DCSOPS	QUICK RATES	Southwest Asia Rates Update	DCSOPS
COSWA	Contingency Operations-Southwest Asia	DCSOPS	QUICKSILVER-1	QUICKSILVER - 1	DCSOPS
COSWA-ALFOR	COSWA - Alternative Force	DCSOPS	QUICKSILVER-2	QUICKSILVER - 2	DCSOPS
COSWA-ALT	COSWA - Alternative Contingencies	DCSOPS	RCOSWA	Requirements, Contingency Operations, Southwest Asia	DCSOPS
COSWA-BEEFS	COSWA - British, Egyptian, French, and Syrian	DCSOPS	RECONCORPS	Reconstitution of a Contingency Corps	DCSOPS
COSWA-CAS	COSWA - Casualties	DCSOPS	REDPATH	Reduction Dynamics Assessment	DCSOPS
COSWA-FASTALS	Contingency Operations SWA-FASTALS	DCSOPS	RE-FOCUS/CFE	Remodel Force Comparison	DCSOPS
COSWA-REQ	Contingency Operations, Southwest Asia - Requirements	DCSOPS	RE-FOCUS PLUS	US vs Soviet - CFE	DCSOPS
DESCASS	Desert Shield Casualty	TAPC	S-PTADS	Remodel Force Comparison US vs Soviet CFE Plus	DCSOPS
DESCASS(R-1)	Desert Shield Casualty Stratification (Rev 1)	TAPC	STAMKRAM	Son of Persian Tiger Air Defense Study	DCSOPS
DSAW-BLUE	Desert Shield Air Warfare Study	DCSOPS	STARARMAN	STARDUST Mobility/Fire power Kill Replacement Analysis	DCSOPS
			STRATANAL	STARDUST QRA	DCSOPS
				STARDUST Mobility Analysis	DCSOPS
				Casualty Stratification Model (CSM) Analysis	TAPC

STRATDEF	STRAT Defender Validation Study	JCS	TFRO	Total Force Roundout	DCSOPS
SWADAN	Southwest Asia Deployment Analysis	DCSLOG	TIGER CLAW 90 TIGER CLAW AD	TIGER CLAW 90 Wargame TIGER CLAW 90 Air Defense Study	DCSOPS DCSOPS
SWADAN-CONOP	Southwest Asia Deployment Analysis, 1st Update	DCSLOG	TSADS	TIGER SWORD Air Defense Study	DCSOPS
SWADAN-FORMODE	Southwest Asia Deployment Analysis - 2d Update	DCSLOG	TS 90 TS-90 VARIANTS	Wargame Tiger Sword '90 Tiger Sword 90 Variants	DCSOPS DCSOPS
TAFES	Total Army Force Evolution Study	DCSOPS	UCP VER-STRAT	Unified Command Plan Verification of the Casualty Stratification Process	DCSOPS TAPC
TANK FLEET	Tank Fleet Analysis	DCSOPS			
TANKRISK	Tank Fleet Risk Analysis	DCSOPS			

Acronym	Definition	Acronym	Definition
ACSIM	Assistant Chief of Staff for Installation Management	KIDA	Korean Institute for Defense Analysis
ADP	Automated Data Processing	LAN	Local Area Network
AHPCRC	Army High Performance Computing Research Center	LANL	Los Alamos Laboratory
AMSAA	Army Materiel Systems Analysis Agency	MACOM	Major Command
ARCEN	US Army Central Command	MERLIN	MDEP Equation for Resource Linking
ARES	Advanced Regional Exploratory System	MISMA	Model Improvement Study Management Agency
ARPO	Advanced Research Project Office	MOBCEM	Mobilization Capabilities Evaluation Model
ASA	Assistant Secretary of the Army	MNJTF	Multi-national Joint Task Force
ASAIL	Assistant Secretary of the Army for Installations Logistics and Environment	MORS	Military Operations Research Society
ATCAL	Attrition Calibration	MR	Memorandum Report
AUSA	Association of the US Army	MRC	Major Regional Contingency
AWC	Army War College	MTMC	Military Traffic Management Command
BRAC	Base Realignment and Closure Commission	NATO	North Atlantic Treaty Organization
CAC	Combined Arms Center	NEA	Northeast Asia
CEM	Concepts Evaluation Model	NLT	Not Later Than
CENTCOM	U.S. Central Command	NMS	National Military Strategy
CFC	Combined Forces Command	NPR	National Performance Review
CINC	Commander-in-Chief	ODCSINT	Office of the Deputy Chief of Staff for Intelligence
COEA	Cost and Operational Effectiveness Analysis	ODCSLOG	Office of the Deputy Chief of Staff for Logistics
CONUS	Continental US	ODCSOPS	Office of the Deputy Chief of Staff for Operations & Plans
CORBAN	Corps Battle Analyzer	ODCSPER	Office of the Deputy Chief of Staff for Personnel
COSAGE	Combat Sample Generator	ODP	Officer Distribution Plan
CSB	CONUS Sustaining Base	OOTW	Operations Other Than War
CS/CSS	Combat Service/Combat Service Support	OPLAN	Operational Plan
CW	Chemical Warfare	OSD	Office of the Secretary of Defense
DA	Department of the Army	PA&E	Program Analysis & Evaluation
DACS	Chief of Staff of the Army	PC	Personal Computer
DEA	Data Exchange Annex	PPO	Pollution prevention opportunity
DUSA(OR)	Deputy Under Secretary of the Army (Operations Research)	POC	Point of Contact
DPAE	Director, Program Analysis & Evaluation	POL	Petroleum, Oils, Lubricants
DPG	Defense Planning Guidance	POM	Program Objective Memorandum
DPRK	Democratic Peoples Republic of Korea	PPBES	Planning, Programming, Budgeting, and Execution System
EUSA	Eight US Army (Korea)	PSM	Professional Staff Month
FASTALS	Force Analysis Simulation of Theater Administrative and Logistics Support	QRA	Quick Reaction Analysis
FD	Force Development	RAA	Research and Analysis Activity
FEBA	Forward Edge of the Battle Area	RCTIFYRS	Reserve Component Training Installation Facility Yearly Requirements Study
FORSCOM	Forces Command	RDA	Research, Development, and Acquisition
FY	Fiscal Year	ROE	Rules of Engagement
GDAS	Global Deployment Analysis System	ROK	Republic of Korea
GUI	Graphical User Interface	SAEDA	Subversion and Espionage Directed against the US Army
HN	Host Nation	SAMAS	Structure and Manpower Authorization System
HQDA	Headquarters Department of the Army	SARDA	Secretary of the Army for Research, Development & Acquisition
IPS	Illustrative Planning Scenario	SCI	Sensitive Compartmented Information
JCS	Joint Chiefs of Staff		
JOPE	Joint Operations Planning and Execution System		
JWARS	Joint Warfighting System		
JWCA	Joint Warfare Capabilities Assessment Group		

Acronym	Definition
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SEC ARMY	Office of the Secretary of the Army
SIMTECH	Simulation Technology
SOFA	Status of Forces Agreement
STOCES	Stochastic Concepts Evaluation Model
SWA	Southwest Asia
TAA	Total Army Analysis
TAEDP	Total Army equipment distribution program
TOE	Table of Organization & Equipment
TPFDD	Time Phased Force Deployment Data
TRAC	TRADOC Analysis Center

Acronym	Definition
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TRADOC	Training and Doctrine Command
TRANSMO	Transportation Model
UJTL	Universal Joint
USAREUR	US Army Europe
USARPAC	US Army Pacific Command
USEUCOM	US European Command
USFK	US Forces Korea
V&V	Verification & Validation
WHNS	Wartime Host Nation Support

APPENDIX A

CAA ANNUAL STUDY, WORK, EVALUATION, AND REPORTING SYSTEM (ANSWERS)

Category (Type)	Sponsor	Mode	Authority	Tasker	Approval Level		Analysis QA		Documentation		
					Sponsor	CAA	Sponsor	CAA	Product	QA	Approval
Study	External	In-house	AR 5-5 AR 10-88	Study Directive	*HQDA Staff Agency Head *MACOM Cdr	Director	GOSC SAG	ARB	*Usually Study Report *Exceptions - Dir approval	PRB	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR 10-88	*Management Decision Memorandum *RFP	*AMC *SIMTECH *DOD/DA		SAG IPR		(Note a)	COR	
Quick Reaction Analysis (QRA)	External	In-house	AR 10-88 (MOD)	CAA Fm 233	*HQDA Staff Agency Head *MACOM Cdr	Director Division Chief (Note c)	*HQDA Staff Agency Head *MACOM Cdr	ARB	Memorandum Report	TQM	Dir, CAA
Project	External	In-house	AR 10-88	Study Directive	*AMC *SIMTECH *DOD/DA	Director	N/A	ARB	Technical Paper	PRB	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR 10-88	*Management Decision Memorandum *RFP	or Dir, CAA (on behalf of sponsor)	Division Chief (Note c)			(Note a)	COR	
Research & Analysis Activity	Internal	In-house	AR 10-88	Directive	Dir, CAA	Dir >4 PSM	N/A	TQM	(Note b)	TQM	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR 10-88	*Management Decision Memorandum *RFP		Division Chief <=4 PSM				Div Chief	Div Chief
									(Note a)	COR	Dir, CAA
CAA Management Mission Support	Internal	In-house	AR 10-88	CAA Fm 233	Div Chief	Div Chief	Div Chief	Div Chief	(Note b)	Div Chief	Div Chief

- a Documentation for contracts will be as specified by RFP. May be amended by negotiation between CAA and the contractor
b Type product is determined by specified CAA approval authority
c Division Chiefs have interim authority for QRA and Projects

APPENDIX B

DEFINITIONS OF CAA WORK CATEGORIES

This appendix contains short descriptions of CAA's principal work categories.

Study - A major in-house or contract effort which is externally sponsored by a HQDA or DOD staff element, MACOM, or other government agency. The analysis effort generally involves more than one-half of a professional staff year (PSY) and the duration usually exceeds 90 days (reference AR 5-5, AR 5-14, AR 10-88). A study directive is required for all in-house CAA study efforts (DA Pam 5-5). CAA documents the results of studies with a Study Report.

Quick Reaction Analysis (QRA) - An operational or strategy oriented analysis of a pressing issue(s) conducted on a quick response basis. QRA are externally sponsored and performed in-house. The analysis effort is less than one-half a PSY and the duration is normally less than 6 months and frequently less than 30 days. CAA documents results of QRAs with a Memorandum Report.

Project - An in-house or contract analytical support effort undertaken by CAA on behalf of an external sponsor. Projects include CAA analytical support activities such as model validation and verification, peer reviews of studies, and international analytic exchange programs. Projects can range from relatively low-cost, short-term efforts to major efforts equivalent in scope to a study. CAA generally documents results of projects with a Technical Paper.

Research and Analysis Activity (RAA) - A CAA-sponsored, in-house effort aimed at developing or improving analytical systems or techniques. Includes the development and modification of analytical models and data bases to support the conduct of studies, QRA, and projects. The product is determined by the tasking authority.

CAA Management/Mission Support (MMS) - Selected work efforts supporting internal CAA program management. The product is determined by the tasking authority.